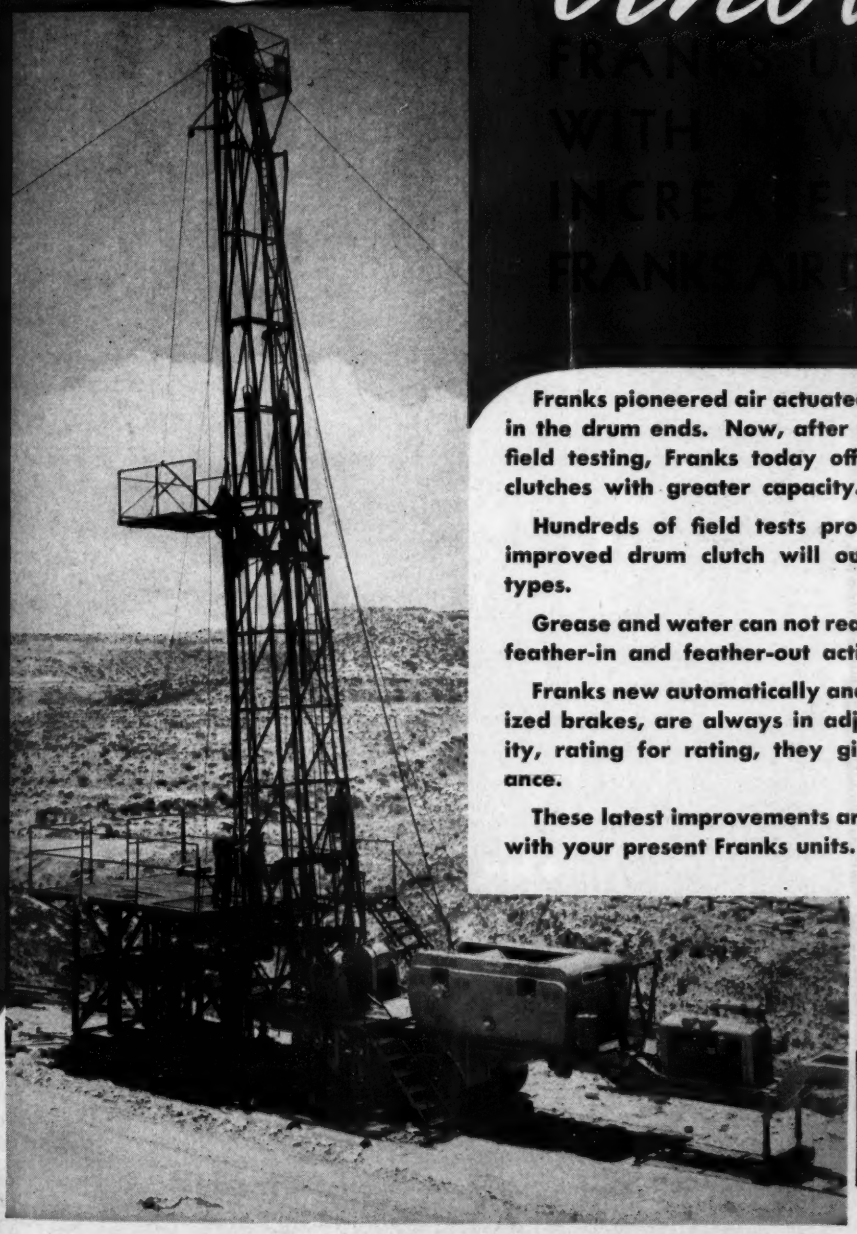
CALIFORNIA
OIL WORLD

Model 65-DTD with 84-ft. 150,000# capacity telescoping derrick—*The derrick with its feet on the ground.*



Another

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Franks pioneered air actuated friction disc clutches mounted in the drum ends. Now, after years of laboratory, shop and field testing, Franks today offers improved Franksair drum clutches with greater capacity.

Hundreds of field tests prove conclusively the Franksair improved drum clutch will out-perform and out-pull other types.

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These latest improvements are also designed to interchange with your present Franks units.

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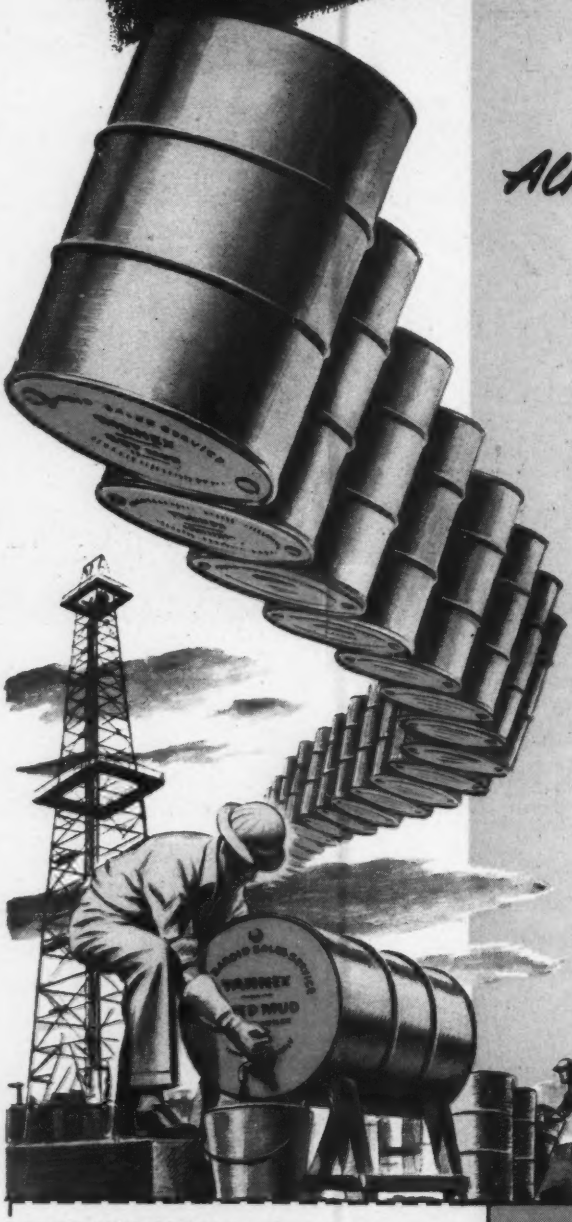
★ ***Investigate Franks—the Original Portable Rig Designer—Before You Buy***

Baroid

And Now...

TANNEX RED MUD CONDITIONER No. 11

A New Liquid Alkaline-Tannate Compound



Baroid now offers a mud-thinner and conditioner in its most convenient form: a liquid already carefully proportioned and ready to add to water, cold or hot • Tannex Red Mud Conditioner eliminates the necessity for storing and handling large quantities of flake caustic and powdered quebracho. It does away with the hazardous, inaccurate, and time-consuming mixing of corrosive ingredients.

Each gallon of Tannex Red Mud Conditioner contains the equivalent of four pounds of dry caustic soda and four pounds of dry Tannex. It comes in steel drums, 650 pounds net weight, ready to mount for instant use. The drums will stand any except freezing weather without spoilage of the product.

Mail the coupon below for more information on this latest Baroid product.

Lowers Viscosity
Reduces Water Loss
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PATENT LICENSES, unrestricted as to sources of supply of materials, but on royalty bases, will be granted to responsible oil companies and others desiring to practice the subject matter of any and/or all of United States Patents Nos. 2,041,086, 2,044,758, 2,044,936, 2,094,316, 2,119,829, 2,294,877, 2,387,694, 2,393,165, 2,393,173, 2,417,307, and further improvements thereof. Applications for licenses should be made to Los Angeles office.

BAROID SALES DIVISION, Department A-8
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Send me detailed information on Tannex Red Mud Conditioner.

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BAROID SALES DIVISION
NATIONAL LEAD COMPANY
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CALIFORNIA
OIL WORLD

PUBLISHED TWICE A MONTH
FOR TIMELY, COMPLETE
OIL NEWS COVERAGE

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September 30th, 1949
Telephone FAirfax 6218

Washington Highlights

Petroleum discoveries and development in the Edmonton area, Alberta, Canada, are of prime importance in North American defense plans. Members of the United States joint chiefs of staff expressed this belief in an interview in Edmonton while their plane was being serviced and refueled. They were on a 10-day inspection tour of Alaska. General Hoyt S. Vandenburg, chief of staff, United States Air Force, was quoted as saying "there just can't be too much oil discovered in North America, no matter what domestic operators say."

A definite setback for President Truman is seen by Washington observers in the Republican victory in Pennsylvania. Republican John Philip Saylor, Navy veteran and severe critic of President Truman's "Fair Deal" program, won a seat in Congress over a Democratic mother, who was a candidate to fill the seat left vacant by the death of her son. Saylor was elected in the Keystone State's 26th congressional district despite strong labor support given Mrs. Robert L. Coffey, Sr., mother of the late Representative Robert Coffey, Jr., killed in a jet plane crash last spring. President Truman, meanwhile, continues to predict his program in time will be enacted in full. He told newsmen the 81st Congress will catch up at its next session on matters he has been unable to put through at the current session. The second session opens in January. Truman is foreseen as possibly spearheading the Democratic campaign in next year's congressional elections by appearing personally in key states throughout the country. Many Washington political analysts would not be surprised if General Eisenhower would announce his candidacy for the 1952 GOP President nomination. Ike's Labor Day speech to the American Bar Association at St. Louis is viewed as concordant with objectives of Republicans, opposing what they call a welfare state, but who at the same time do not wish to return to the days of Mark Hanna. Word from California disclosed Republicans in that state are bent on a fund raising policy. Holding a silver dollar in his hand, Thomas P. Pike, GOP fund campaign chairman for Southern California and prominent member of the oil industry, emphasized small donations as the backbone of the party's effort this year at a breakfast meeting.

Negotiations for a United States loan to Mexico for oil development south of the border are continuing in Washington. The Chief executive at a news conference expressed confidence an agreement satisfactory to both countries will be attained.

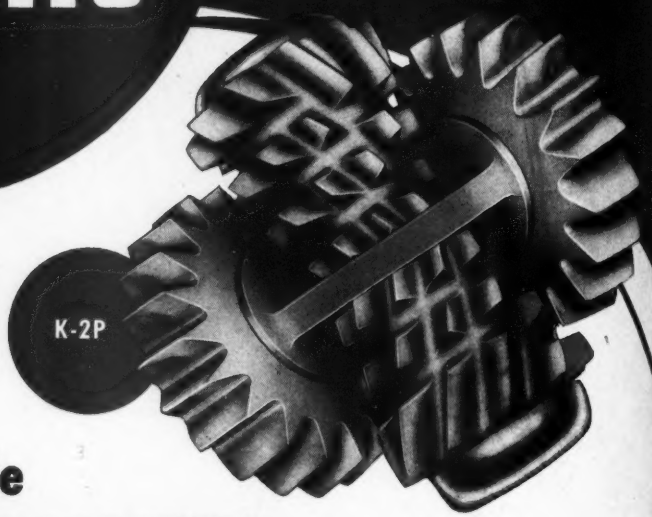
Director James Boyd has reported the naming of seven regional chiefs of the reorganized Bureau of Mines, including Harold C. Miller, San Francisco, for Region 3. Boyd announced that Joseph H. Hedges, mining engineer, has taken over the duties as chief of the new Minerals Division in Washington. Hedges has been superintendent of the Southwest Experiment station at Tucson, Arizona.

The Census Bureau has made known that the number of jobholders reached a 1949 peak of 59,947,000 in August, while the total of idle workers decreased more than 400,000. The bureau's report denoted that unemployment declined to 3,689,000. It had risen in July to 4,095,000. This was the highest level since 1942. The report denoted a substantial increase in factory and other non-farm employment.

Miss Patricia June Downey, daughter of Senator and Mrs. Sheridan Downey of California, and Joseph Godfrey Brogden, son of Mr. and Mrs. James W. Brogden of Washington, were married here. Senator Downey is a Democrat.

A special committee, appointed by the National Petroleum Council to undertake the study of the manpower needs of the petroleum industry, has completed work on a questionnaire. This was announced by W. W. Vandeveer, special committee chairman. Upward of 25,000 copies of the questionnaire have been mailed out from headquarters of the National Petroleum Council in Washington to every company in the industry. The committee divided the survey forms into five separate classifications. They are exploration and production, manufacturing, pipeline transportation, and supplies, shipping and distribution and general management. Companies in filling out the forms are requested to indicate the total number of personnel employed by the company in each of these general classifications.

H.C. SMITH ROCK BITS



full gauge hole
FASTER-STRAIGHTER

H C Smith
OIL TOOL CO.

GENERAL OFFICES AND PLANT
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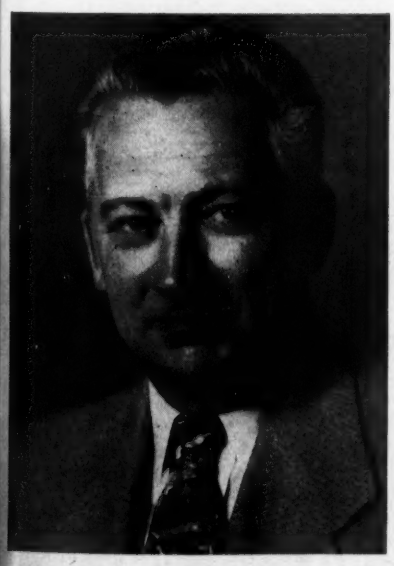
Measurement and Control Instrument Exposition of The Southern California Meter Association to be held October 4th, 5th 6th

In conjunction with the Measurement and Control Instrument Exposition to be held at the Long Beach Municipal Auditorium on October 4, 5 and 6, the Southern California Meter Association will also offer a program of addresses and recent motion pictures of general technical interest.

Arrangements have been made for afternoon and evening lecture sessions at the Exposition Auditorium which will include the following speakers:

1. Mr. C. S. Beard, Instrument Engineer Bechtel Corporation, San Francisco, California.
   Subject: Standardization of Design Drafting Symbols."
2. Mr. Ralph Brown, Instrument Engineer Firestone Tire & Rubber Company, South Gate, California.
   Subject: "Instrumentation in Rubber Processing."
3. Mr. Adelbert Carpenter, Division Manager Fischer-Porter Company, San Francisco, California.
   Subject: "Variable Area Flow Rate Instruments."



R. F. Fields
(Association President)

James E. Gesner
(Exposition Chairman)

4. Mr. J. F. Engelberger, Development Engineer Manning, Maxwell and Moore, Bridgeport, Connecticut.
   Subject: "An Electro-Mechanical Approach to Instrumentation and Control."
5. Mr. Wm. F. Ertzman, Instrument Engineer Northrop Aircraft, Inc., Hawthorne, California.
   Subject: "Instrumentation in Aeronautical Research and Development."
6. Mr. Wm. A. La Violette, Assistant Engineer Pacific Gas & Electric Company, San Francisco, California.
   Subject: "Telemetering and Remote Control."
7. Mr. Robert Parks, Research Test Engineer Northrop Aircraft, Laboratory, Hawthorne, California.
   Subject: "Testing Airborne Temperature Controls."
8. Mr. Louis Possner, Division of Electrical Engineering University of California, Berkeley, California.
   Subject: "Measurement of Heat Radiation and Heat Flow."

The following films will also be shown:

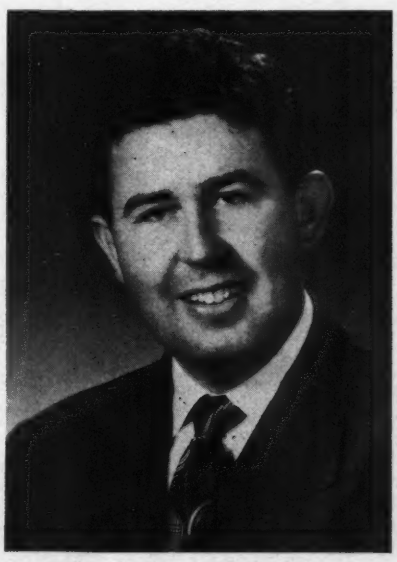
"An Oil Well is Born"
This film was furnished through the courtesy of the Shell Oil Company and is very interesting, portraying the story of an oil well from spudding-in to completion.

"Desert Venture"
This film was furnished through the courtesy of the Texas Company and deals with new developments in Saudi-Arabia.

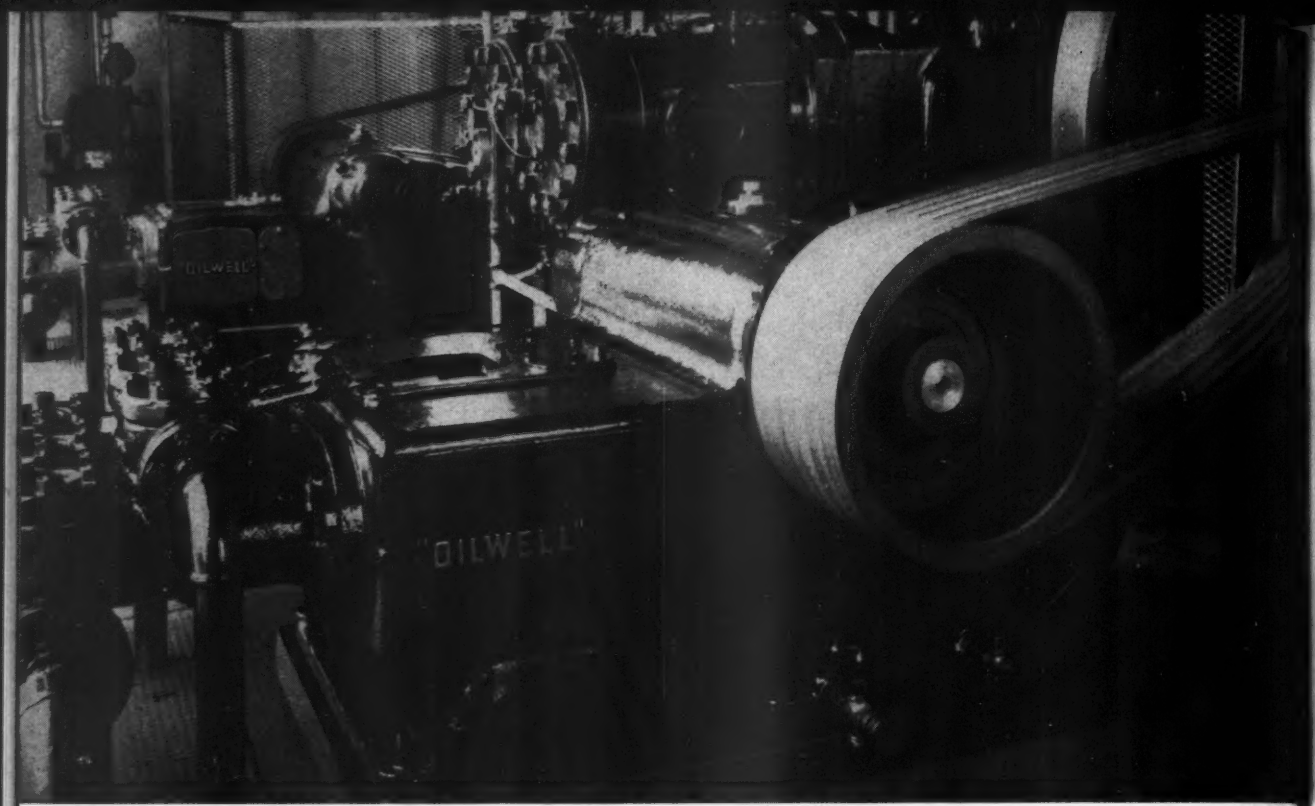
"Last Ten Feet"
This film, furnished through the courtesy of the Texas Company, shows completion technique in today's bore hole tapping of nature's store of oil and gas.

"The Magic Flame"
This film, furnished through the courtesy of the Southern California Gas Company, has to do with utilization of natural gas in home and industry.

"Westward Flow"
Also furnished through the cour-



Louis J. Delaney
(Chairman Entertainment Committee)



. designed for WATER-FLOODING and SALT WATER DISPOS

"Oilwells" No. 36-P and No. 46-P Triplex Plunger Power Pumps

THE "OILWELL"—Wilson-Snyder No. 36-P and No. 46-P Triplex Plunger Pumps are heavy-duty, horizontal, three-cylinder, single-acting pumps designed for water-flood operations in which large volumes of water at medium-high pressures are required.

Outstanding advantages of these pumps where continuous operations are necessary: (1) pumps are equipped with sufficient valve capacity for operating at high speeds, (2) the gear and pinion assembly is enclosed in an individual housing, designed for accessibility and easy repair without stripping crankshaft and pinion shaft assemblies, (3) hardened and ground plungers are sealed by grease lubricated chevron packing and available in a choice of corrosive and abrasive resistant materials, (4) the enclosed power end of these pumps is doubly protected against entry of mud or foreign materials, (5) a gear type oil pump circulates oil to all wearing parts that are not oil bath or grease lubricated, and (6) these two pumps are designed interchangeable for either right-hand or left-hand drive.

THE PERFORMANCE CHARACTERISTICS of the "Oilwell" No. 36-P and No. 46-P Triplex Plunger Pumps are immediately apparent from the engineering data presented in the following tables, the wide operating speed range for flexibility is readily apparent. Theoretical displacement in gallons per minute and horsepower requirements are shown.

Pump	Optional Plunger Dia.	Max. Fluid Pressure Lbs. per sq. in.	G.P.M. at 40 R.P.M.	G.P.M. at 60 R.P.M.	G.P.M. at 80 R.P.M.	G.P.M. at 100 R.P.M.	G.P.M. at 120 R.P.M.	G.P.M. at 140 R.P.M.
46-P	*4½"	630	50	74	99	124	149	174
4½"x6"	4"	795	39	59	78	98	117	137
	3½"	1040	30	45	60	75	90	105
	*3"	1420	22	33	44	55	66	77
36-P	2¾"	1680	19	28	37	46	56	65
3"x6"	2½"	2040	15	23	30	38	46	54
	2¼"	2510	13	19	25	31	37	43
H.P. required to secure listed pressures at indicated R. P. M.			22	32	43	54	64	75

*Standard Plunger Size.

Bring your pump problems to your nearest "Oilwell" store and get complete information on the all-purpose No. 36-P or No. 46-P Triplex Pumps.

OIL WELL SUPPLY COMPANY

Serving the California Oil Industry Continuously Since 1896

934 North Alameda Street, Los Angeles

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USS "OILWELL"

UNITED STATES STEEL

tesy of the Southern California Gas Company and the Southern Counties Gas Company, this film is a very interesting portrayal of the construction of the 30-inch natural gas transmission line from Texas to Los Angeles, and which now furnishes a considerable portion of the natural gas supply to Southern California.

In addition to the lectures and pictures, there will also be a specially conducted tour of industrial plants each afternoon for visitors attending the Exposition. These are approximately one-hour tours and the schedule is as follows:

Tuesday, October 4—Ford Motor Company, Wilmington Plant.

Wednesday, October 5—Union Oil Company, Wilmington Refinery.

Thursday, October 6—Proctor & Gamble, Long Beach Plant.

Attendance at the Exposition is expected to exceed the large attendance of last year in view of the many exhibits of new and improved measurement and control instruments for use in all of the various branches of industry. The Exposition Hall will be open to visitors each day from 1:00 P.M. to 10:00 P.M.

Admittance to the Exposition is by complimentary ticket — tickets may be obtained through the Secretary of the Southern California Meter Association, Mr. George Forster, P.O. Box 320, Long Beach 1, California; phone Long Beach 4-1621.

Nomads Sept. Meeting

The first meeting of the Los Angeles Nomads since June was held at the Jonathan Club, September 14. Two reels of the U. S. Navy film covering the Navy Project, Pet 4 were shown. The films concerned the search for oil in Northern Alaska. This search has been under way for some time and will continue at least into 1953.

The reels shown were "Exploration For Oil" and "Equipment For The Arctic." The films were presented by H. E. Cassidy of the McCarty Company.

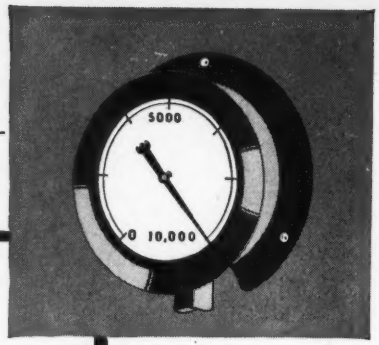
Ben E. Mater of Baker Oil Tools, Inc. was welcomed as a new member.

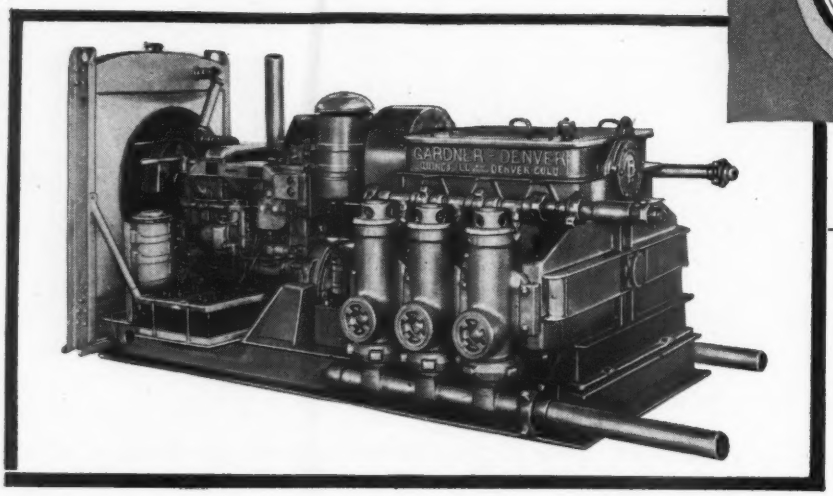
Five new requests for membership were offered at the meeting. These are: Onos Lindsay, Eastman Oil Well Survey Co.; Frederick B. Williams, Baroid Sales Division; D. J. Bergeron, Baash-Ross Tool Co.; Daniel M. Bernt, Pacific Perforating Co.; Art Moore, Oil Base, Inc.

Foreign guests at the meeting were: Ralph H. Connor who is returning here after serving several contracts with the Basrah Petroleum Co., Tripoli, Lebanon. His service there was interrupted only by his ship building activities in Southern California during the war. Zell W. McCoy who has spent the last 10 years with the Texas Petroleum Co., Bogota, Colombia; C. B. Ridgeway, Arabian-American Oil Co., Saudi Arabia; T. A. Connor, Iraq Petroleum Co., Iraq, home on sick leave recovering from an accident in the oil fields; Algar L. Ridgeway, Standard Oil Co.; W. K. Kirby, field manager for Canso Azul, Lima, Peru. He is a resident of Altadena, California, and has managed the field activities of this company for the last several years; Wm. Ohlandt, Jr., Texas Petroleum Company, Caracas, Venezuela, who has recently completed two years with the Arabian American Oil Co. of which the Texas Petroleum Co. is one of the owners. His position in Caracas, Venezuela is his initial foreign assignment; J. G. Woods, Richmond Exploration Company, Maracaibo, Venezuela, who has been with Standard Oil many years and has been assigned to Richmond Exploration Company since 1945; John L. Everett, Mene Grande Oil Co., Venezuela; G. H. Atkins of the Creole Petroleum Corporation located in the Eastern Venezuela area; C. H. Strickland, Iraq Petroleum Company, Iraq, who is here on special home leave. He has had other foreign assignments with this company as well as with the Turkish Government; C. M. Williams, Iraq Petroleum Co., Iraq; C. R. Devine, Basrah Petroleum Co.., Iraq, who was formerly with Drilexco in Brazil; Wladimir Ziloff, Pantapec Oil Co., Venezuela, formerly of the French Institut du Petrola, now assigned in eastern Venezuela.

Seated left to right: Wm. Ohlandt, Jr.; C. B. Ridgeway; G. H. Atkins; C. H. Strickland; C. R. Devine. Standing left to right: T. A. Connor; Wladimir Ziloff; Ralph H. Connor; C. M. Williams.

strength for this





and stamina to finish the job

Gardner-Denver PL7 Super-Pressure Oil Well Service Pump

Built for squeeze pressures up to 10,000 pounds per square inch, the Gardner-Denver PL7 Super Pressure Oil Well Servicing Pump is designed with extra safety factors to see the job through to completion. The PL7 pumps more than 200 gallons per minute at 1,000 pounds per square inch pressure — or approximately 25 gallons per minute at 8,000 pounds pressure.

New Compactness — As a result of new principles of design, the PL7 pump is unusually compact and mobile. The six pump cylinders are arranged in two banks, as two triplex single-acting plunger pumps. One bank of three plungers is 3½ inches in diameter and the other bank is 4¾ inches in diameter, all using 7-inch stroke.

Unusual Flexibility — An exclusive feature of the PL7 pump provides a wide pressure and volume range. Pump may be operated on either bank, or on both banks at the same time. Low pressure work is handled at a volume of more than 250 gallons per minute, using all six plungers. High pressure work is done with either bank of three cylinders, and at reduced speed pump operates at 8,000 lbs. pressure, or up to 10,000 lbs. squeeze pressure.

Strong, Yet Lightweight — Extensive use of steel in constructing the PL7 assures ample strength for extreme operating conditions—keeps pump lightweight and easy to haul.

For complete information, write Gardner-Denver Company, Quincy, Illinois.

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Republic Supply Co. (of Calif.), 2600 S. Eastland Ave., Los Angeles, Calif.

The Balanced Rotary Rig

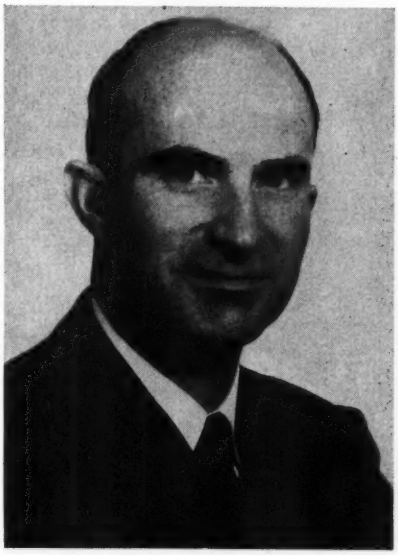
by
C. H. Oberg
Standard Oil Company of California, Taft, California

The range of load variations necessary to accomplish all the functions of a rotary drilling rig such as drilling, hoisting, fishing, pumping, rotating and a host of auxiliary operations present a huge and complex problem to the designer and purchaser. The operator's ultimate aim in assembling any drilling rig is to be able to drill wells with the maximum of speed and with the lowest cost. The contractor who underpowers and overloads his equipment or who provides capacity far in excess to that which is required is usually endangering his reputation and his financial position. The proper design and economy in a rotary drilling rig is a matter of engineering fact and therefore sound engineering advice, seasoned with the salt of experience, should be requested when planning to invest the huge sums involved in a modern drilling unit. Once the capacity of the rig has been established by the original design conditions, any substantially different set of conditions should be reviewed with care to establish what effect they will have on the equipment. This will allow modifications in the design or revisions in estimates to be made with due judgment.

In and Out of Hole Consumes Most Time

A drilling rig is called upon to perform two distinct main features which consume 40 to 60 per cent of the total time expended on an average well. The first function is to drill which involves two operations—rotating the drill pipe and circulating the drilling fluid. The second function is to hoist and lower pipe to and from the well. These two functions are quite separate and the capacity of the rig for either is often underbalanced. It is generally recognized that the proper rig for use in drilling soft formations is uneconomical for use in drilling hard rock formations and vice versa. In softer formations fewer trips are made and high pumping capacity is required. In the harder formations, a large number of round trips are made and lower circulation rates are required.

The first problem in obtaining a balanced rig then becomes a matter of establishing the power requirements involved in performing the above two functions. The second problem involves the use of this information in establishing the distribution of horsepower to suit a particular set of conditions. Because of the current general interest in mechanical rigs powered with internal combustion engines, the following discussion will be centered on this type of equipment.



C. H. Oberg

Mud Circulation Rates Should be High

The circulation of mud is the major job on a rotary rig, consuming 70 to 85 per cent of the horsepower hours used in drilling an average well. (1) Past investigations have shown that in all but the hardest formations, the rate of penetration is proportional to the rate of circulation. Nolley, Cannon and Ragland in a recent important paper on drag bit research indicated that the rate of penetration of softer formations is directly proportional to the product of the rate of circulation and bit nozzle fluid velocity. (2) In a recent paper, Crake emphasized the value of high circulating rates and stated that rate of flow determines the following:

(1) The rate at which cuttings are lifted to the surface.

(2) The volume of cuttings carried by each cubic foot of mud, and therefore, mud contamination.

(3) The speed at which mud in the hole can be reconditioned, or the weight or other characteristics changed, to suit emergencies or other conditions.

(4) The size of the cavings which can be removed and, thus, the hazard of sticking the pipe.

(5) The amount of gas entrained in a cubic foot of return fluid and thus the blowout tendency of the fluid column.

(6) The amount of bad mud contained in a well in case of a blowout hazard.

Thus the key to drilling efficiency lies first in the determination of the quantity of fluid in gallons per minute required to maintain proper velocity in the mud stream. This in turn will determine the friction losses and the power required for circulating mud.

Factors Involved

Although relatively high mean velocities in the returning mud stream and high nozzle fluid velocities are desirable, they are often limited in application by the friction head or pressure drop developed within the mud circulating system. In order to keep this pressure drop at a minimum careful attention must be given to the relationship of hole diameter to drill pipe size, using the largest size of drill pipe in the smallest hole diameter that will provide satisfactory clearance for fishing as well as clearance for running casing.

The annular velocities that are considered most satisfactory range from two to four feet per second; the higher velocities being required where the formations are softer and the mud stream is required to carry more and larger cuttings. Greater annular velocities may cause the mud to have turbulent flow and require a much greater pressure head. High annular velocities also may impose greater pressure on the formation, causing loss of mud to the

A versatile valve for general service . . .

LUNKENHEIMER

Figure 123

N - M - D

NON - METALLIC - DISC

150 lb. S.P.
300 lb.W.O.G.

The valve with the quick-change disc

STEAM • HOT WATER • COLD WATER
AIR AND GAS • GASOLINE • OIL • BUTANE • PROPANE

Fig. 123 is an exceptionally rugged valve . . . available with various types of discs especially compounded to give top results on the services for which they are recommended. Discs can be renewed or interchanged quick as a wink, insuring long-time satisfactory valve service with negligible maintenance expense. Disc holder is slip-on type, perfectly guided. Hexagon head gland is an aid to easy repacking. A further economy feature is the distinctive long-wearing stem material developed by Lunkenheimer, eliminating stem-thread failure due to wear.

The "N-M-D" valve is also regularly available in angle, check and quick operating patterns. Circular No. 558, descriptive of the complete line, is yours for the asking.

N. M. D. and other Lunkenheimer Valves are available in all industrial centers. You can depend upon your Lunkenheimer Distributor for prompt service on your requirements.

ESTABLISHED 1862

THE LUNKENHEIMER CO.

"QUALITY"

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EXPORT DEPT. 318-322 HUDSON ST., NEW YORK 13, N. Y.

formation when circulating and expose the well to a blowout when circulation is stopped. This is explained by the fact that this pressure change might be equal to or greater than the difference between the formation and over-burden pressure.

The fluid velocity in the drill pipe is usually within the region of turbulent flow of the mud and for this reason the range of velocity in the pipe should be no greater than 8 to 11 feet per second to keep the pressure drop to a minimum. It is interesting to note that in the formula suggested by Beck, Nuss and Dunn for pressure drop in the drill pipe with turbulent flow is proportional to the square of the mud velocity, proportional to the mud density and inversely proportional to the diameter of the pipe. (3)

A nozzle fluid velocity of 300 to 400 feet per second has proved desirable when drilling soft formations with jet type bits. (2) The practical limits on this important feature have not been well established but the resulting pressure drop is of such magnitude that it should not be overlooked when considering the design of a mud circulating system. The energy requirements for such nozzle velocities could amount to several hundred horsepower.

It should also be noted that the surface pipe, the standpipe, hose, swivel and kelly should be of a uniformly large inside diameter, should be short and should be free of unnecessary turns in order to avoid large pressure drops when circulating large volumes of fluid. It is often surprising for many to learn that these surface items cause a pressure drop of as much as 150 psi and require the use of energy equal to 75 horsepower. An additional power loss is suffered in the pump and is normally considered to be 15 per cent.

Pump Input Horsepower

The largest portion of the horsepower hours consumed in circulating mud are used in drilling the hole to be cased by the oil producing string. It is logical, then, that the pumping plant on a balanced rig should be determined in most cases by the circulation required when drilling the proper size hole for this casing. Table I was prepared to indicate the horsepower requirements for attaining various annular velocities in the popular sizes of hole drilled for 5½ inch and 7 inch casing. With the exception of high nozzle fluid velocities, the factors indicated in the previous paragraphs and current articles on the flow of mud were considered in the preparation of this table. (2, 3, 4, 5, 6)

In hard formation drilling with high ratios of drill pipe to hole diameters and low annular velocities, the required pump horsepower is only a fraction of the power needed for hoisting and can be supplied by the drawworks engines. For the drilling of softer formations with low drill pipe to hole diameter ratios and high annular velocities for the removal of many and large cuttings, the necessary pump horsepower is equal to or greater than the hoisting horsepower. For this reason, considerable more care must be taken to provide sufficient power balanced to suit the needs of the rig. Round trips are infrequent when drilling soft formations and it is imperative that large drill pipe such as 5 inch or 5½ inch O.D. be used in drilling the larger hole required in order to decrease the amount of installed horsepower and to lower maintenance and operating costs. The cost of circulating sufficient fluid when drilling harder formations is not so critical and the savings to be realized in using the larger drill pipe are offset by the added cost of wire lines and related hoisting equipment that are worn more rapidly when making frequent round trips with the heavier pipe.

In Table II is shown the typical horsepower requirements for the circulation of mud for California type drilling derived from the information shown on Table I. Large sized holes are required for the usual 7 inch casing and it is necessary to use large sizes of drill pipe to attain high annular velocities in the softer formations. Smaller pipe can be used economically in the harder and deeper formations where smaller holes are often drilled below protective strings of casing. The difficulties encountered in condition-

TABLE I: APPROXIMATE HORSEPOWER REQUIREMENTS FOR THE CIRCULATION OF MUD

		2 FT. PER SECOND ANNULAR VELOCITY			3 FT. PER SECOND ANNULAR VELOCITY			4 FT. PER SECOND ANNULAR VELOCITY		
DEPTH	HOLE DIA.	4 ½" IF	5 " IU	5 ½" FH	4 ½" IF	5 " IU	5 ½" FH	4 ½" IF	5 " IU	5 ½" FH
3,000	11 "	160	105	80	460	300	260	1,110	760	570
	9 7/8	90	55	50	240	160	130	520	350	260
	8 3/4	40	30	25	90	65	60	210	135	170
	7 7/8	20	20		40	30		70	50	
6,000	11	250	160	130	750	460	390	1,790	1,120	830
	9 7/8	140	85	80	390	250	200	850	540	400
	8 3/4	70	50	45	150	110	100	350	210	230
	7 7/8	35	35		75	55		120	85	
9,000	11	350	220	180	1,050	610	510	2,460	1,480	1,100
	9 7/8	200	115	105	530	330	260	1,180	730	530
	8 3/4	95	70	60	210	150	140	480	290	290
	7 7/8	55	50		105	85		170	120	
12,000	11	440	280	230	1,350	760	640	3,140	1,840	1,350
	9 7/8	260	140	135	690	420	330	1,510	920	660
	8 3/4	120	90	80	270	190	180	620	370	350
	7 7/8	70	70		135	110		220	155	
15,000	11	540	340	280	1,640	920	770	3,820	2,220	1,610
	9 7/8	310	170	160	850	510	400	1,840	1,110	790
	8 3/4	150	110	100	330	230	220	760	440	410
	7 7/8	85	85		165	135		270	190	
GALLONS PER MINUTE	11	500	470	440	740	710	670	980	940	880
	9 7/8	380	360	330	580	540	500	770	720	670
	8 3/4	270	250	220	410	380	350	550	500	450
	7 7/8	160	140		240	210		320	280	

NOTE: (1) APPROXIMATE MUD WEIGHT 10.0 LBS. PER GALLON OR 75 LBS. PER CU. FT. POWER REQUIRED VARIES APPROXIMATELY IN DIRECT PROPORTION TO MUD DENSITY.
(2) IN ABOVE COMPUTATIONS, THE BIT WAS CONSIDERED TO HAVE FOUR 3/4 INCH HOLES. HIGH FLUID NOZZLE VELOCITIES WERE OMITTED.
(3) NOMINAL WEIGHTS OF PIPE SHOWN: 4½ IN. 16.6 LBS. ; 5 IN. 19.5 LBS ; 5½ IN. 21.9 LBS

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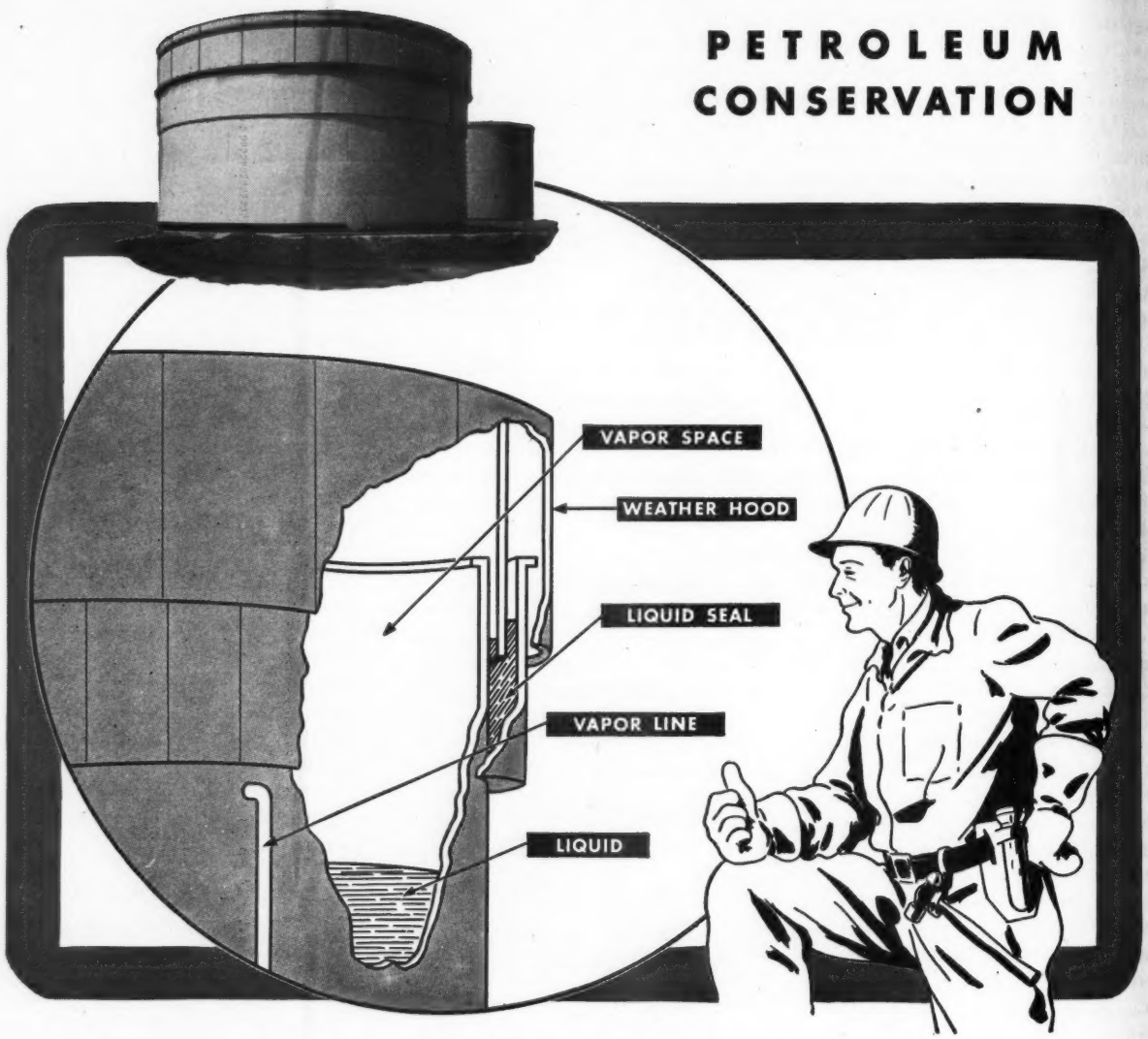

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ing the hot, heavy and viscous muds used in deeper drilling usually require the addition of a pump for mud conditioning in addition to a standby pump. The drilling of large diameter holes for surface casing or intermediate strings may be accomplished with satisfactory annular velocities by paralleling the dual pump installations.

Power Requirements for Rotary Table

The power required for rotating varies over a wide latitude because of the many sizes of hole drilled and because of the range in speeds. A rule of thumb formula for the conventional type of drive is to use 1 horsepower for each revolution per minute of the table. (7) Ample horsepower for rotating is provided by the No. 1 engine on most mechanical rigs and it becomes a relatively minor problem.

Power Requirements for Pipe-Hoisting

An adequately powered drawworks will start hoisting drill pipe off bottom at rated depth at around 100 feet per minute. The rule of thumb method of calculating hoisting horsepower is to use 100 horsepower for each thousand feet of 4½ inch drill pipe at rated depth. A change in drill pipe size or weight will change the depth rating or the horsepower required to a considerable extent.

Since only a small fraction of the total drilling time on a well is used in making trips, any great increase in the available hoisting power above that indicated would not be warranted because only the hoisting time, or 7½ to 12½ per cent of the total round trip time, would be affected. (1) However, in localities where few round trips are made, it might be desirable to slightly decrease the hoisting horsepower per 1000 feet and in areas with hard formations, where numerous round trips are made, it might be desirable to increase the unit power value.

A considerable power loss occurs between the engines and the hook. It is common to consider the loss in each line strung up as being equal to a 2 per cent power loss. The loss in the compounding transmission, the selective speed transmission and the drawworks is usually in the range of 18 to 20 per cent. The additiion of torque converters between the engine and the hook will increase this power loss at full engine loads but will permit higher average hook horsepower.

It was noted that the drill collar weight influenced the hoisting horsepower. The required weight on the bit is governed by the type of drilling being performed and the crushing strength of the formation. Sufficient drill collars are usually provided so that the bit weight is ⅔ to ¾ of the drill collar weight.

Balancing Power Requirements

One engine on the pump and one on the drawworks has been proved most satisfactory for 3000 ft. drilling. The use of 5 inch drill pipe allows the use of the same size of engine on the pump and on the hoist in order to obtain the desirable annular velocity of 3 ft. per minute and hoisting speed of 100 feet per minute. The use of either 4½ or 5½ drill pipe places the power requirements out of balance; making the pump engine larger in one case and the hoist engine larger in the other.

To obtain the desirable annular velocities and hoisting speeds for 6000 ft. drilling with 5 inch drill pipe requires 480 H.P. for the pump and two 320 H.P. engines on the hoist. This appears to have better power balance than when using 5½ inch drill pipe requiring 390 H.P. on the pump and two 350 H.P. engines on the hoist. With this size of rig it is advantageous to have a standby and mud mixing pump, smaller than the main pump, operated by one of the hoist engines.

Fast drilling of the soft formations in California requires that an annular velocity of 3 feet per second be maintained. As it is common to drill an 11 inch hole for the usual 7 inch water or oil string, it is imperative to use 5 inch or 5½ inch drill pipe in order to keep the mud pumping power plant to a reasonable size. By installing sufficient horsepower to obtain the 3 feet per second velocity with 10 lb. per gallon or 75 lb. per cubic foot mud at rated depth, sufficient power is available to obtain desirable higher annular velocities at more shallow depths or in the slightly smaller holes that are sometimes drilled for the 7 inch casing. It also insures an ample velocity of mud in case the circulation pressure losses are increased with heavier mud weights. Because of the difficulties encountered with crooked holes caused by tilting formations, very light weight is carried on the bit and a drill collar load of 20,000 lbs. is common.

For 9000 ft. drilling, it is desirable to have the standby pump of equal size to the main pump. In some cases it is necessary in drilling to this depth to install a third small pump for mud conditioning and mixing. The horsepower advantage when using 5½ inch drill pipe is more apparent with this size of rig. The balanced power layout with 5½ inch drill pipe provides an alternate hoisting engine and has fewer packages to handle when moving. It has the disadvantage of providing an excess of power to the rotary and when an engine is down, the mud circulating system is crippled to a greater extent.

For drilling to greater depths, the power layout is much the same as for the 9000 ft. rigs, except for size. It is necessary to install a third pump for deeper drilling operations to provide adequate facilities for the mixing and conditioning of mud. Often all three pumps must be operated simultaneously; one for circulating mud, the second for conditioning the mud in the circulating system, and the third for mixing new mud, transferring mud to other tanks, or circulating mud over a cooling tower or degassing tower.

In providing balanced power to a rig, care should be taken to install engines of equal size and type in order to provide a means of keeping operating costs and supplies to a minimum. A crew that is thoroughly familiar with one size and type of engine will help to decrease maintenance costs.

Hoisting Equipment Design

The design of the hoisting system of a rotary rig is governed by the wire line to be used. The working strength of the line will determine the depth to which it can economically handle a given size of drill

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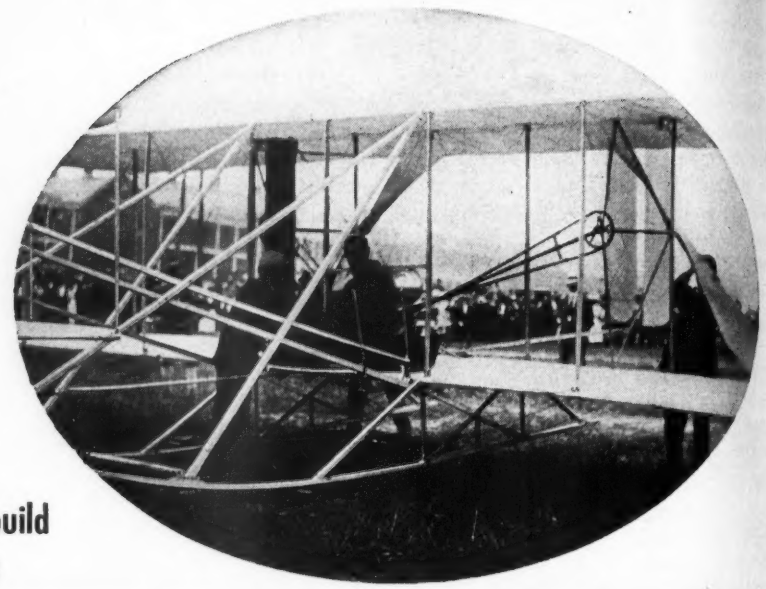

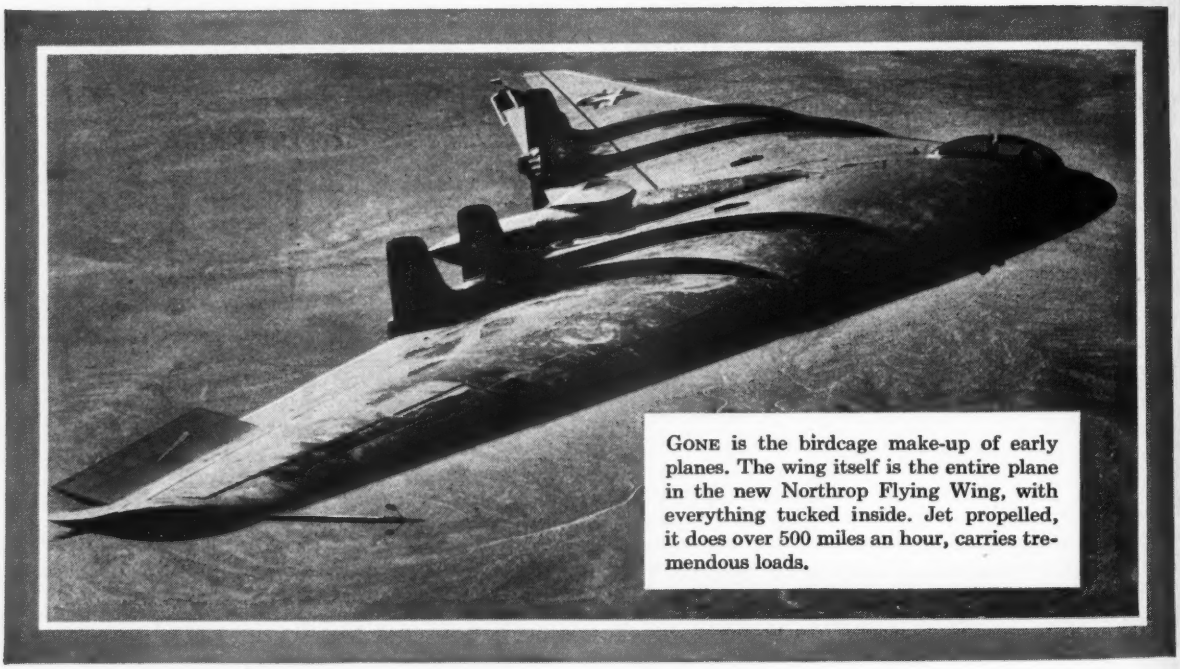

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pipe. The diameter of the line and type of construction will determine the crown and traveling block sheave diameters, the drawworks drum size, and the brake diameter. As insurance for a reasonably long wire rope life, the working load on the line when handling drill pipe should be one-fourth of the breaking strength of the line. A 3 to 1 factor of safety may be used satisfactorily at the slow speeds used when running casing. The general practice in the industry is to reeve six to eight lines for shallow to medium drilling depths and to use eight to ten lines for medium to deeper drilling. An extra two lines are often added for running casing. The most satisfactory type of rope used for rotary hoist service is the 6x19 Seale type of construction.

The Derrick

The strength of the wire line can also be utilized to determine the capacity of the derrick in which it is to be used. In this case a factor of safety of two for the wire line should be specified. This is the same factor of safety used in the design of the derrick.

The height of the derrick should depend on the depth of the well and the frequency of the round trips. The size of the wire line used will also influence the height of the derrick as the size and width of the drawworks drum will be determined by the wire line size. The width of the drum and the height of the derrick will then be influenced by the fleet angle the line coming off the drum makes with the center line of the fast sheave in the crown block. It is recommended that this angle be less than 1½ degrees.

The time spent in making round trips is usually such a small portion of the total time spent on a well that the savings obtained by faster round trip time in the taller derrick or mast should be carefully analyzed in order to justify the greater investment and added moving cost. The usual balance attained in this matter involves the use of 90′ masts for shallow drilling, 126′ to 136′ masts or derricks for medium deep drilling, and 150′ or 189′ derricks for deeper drilling.

Derrick Tackle

The design of the crown block and traveling block should be influenced by the size of the wire line to be used. The Wire Rope Institute recommended that the minimum diameter of the sheave be 30 times the wire rope diameter for the usual 6x19 Seale type of construction. A factor of 45 times the rope diameter should be used when possible to improve the life of the rope.

The capacity of the hook, crown block and traveling block may also be designed on the basis of the strength of the wire line used. As in the case of the derrick capacity, a factor of safety of two for the wire rope should be used. Current design practice for the hook and blocks requires the use of a factor of safety of four.

The life of the bearings in the crown and traveling blocks will be materially lessened if the rated speed and load on the bearings is surpassed. Care must be exercised to choose blocks with ample bearings for the tonnage and speed anticipated in order to obtain reasonable bearing life.

The importance of having balanced sizes and capacities of equipment in contact with the wire rope on deeper wells is indicated by the anticipated ton miles of service as follows:

Depth of Well
3000
6000
9000
12000
15000
Formation
Soft
Soft to Medium
Hard
Medium
Hard
Anticipated Ton Miles
500
4000
20000
30000
100000

Draw Works

The design of the drawworks should be determined by the wire line size required to handle the drill pipe and drill collars at rated depth. The size of the line will directly limit the specifications of the drum and will indirectly govern the horsepower input to the drawworks based on the formula of hoisting the rated load of drill pipe at 100 feet per minute. On most drawworks this speed is accomplished with the middle transmission speed. The high speed is governed by the speed with which the crew can handle the equipment with the usual number of lines up. The line speed in high normally ranges from 2000 feet per minute on light

TABLE II: TYPICAL HORSEPOWER REQUIREMENTS FOR THE CIRCULATION OF MUD CALIFORNIA TYPE DRILLING.

DEPTH (FEET)	DRILL PIPE (O.D.)	HOLE SIZE (INCHES)	CASING SIZE (INCHES)	ANNULAR VELOCITY (FT./SEC.)	PUMP	PUMP ENGINE HORSEPOWER *	SERVICE
3,000	5	11	7	3	NO. 1	320	CIRCULATING
6,000	5	11	7	3	NO. 1	320	CIRCULATING
					NO. 2	480	STAND BY
6,000	5½	11	7	3	NO. 1	410	CIRCULATING
					NO. 2	410	STAND BY
9,000	5	11	7	3	NO. 1	640	CIRCULATING
					NO. 2	640	STAND BY
9,000	5½	11	7	3	NO. 1	540	CIRCULATING
					NO. 2	540	STAND BY
12,000	5	11	7	3	NO. 1	800	CIRCULATING
					NO. 2	800	STAND BY
					NO. 3	200	MUD CONDITIONING
12,000	5½	11	7	3	NO. 1	680	CIRCULATING
					NO. 2	680	STAND BY
					NO. 3	200	MUD CONDITIONING
15,000	5	11	7	3	NO. 1	970	CIRCULATING
					NO. 2	970	STAND BY
					NO. 3	200	MUD CONDITIONING

NOTE: * EFFICIENCY OF ENGINE TO PUMP DRIVE ASSUMED TO BE 95%.

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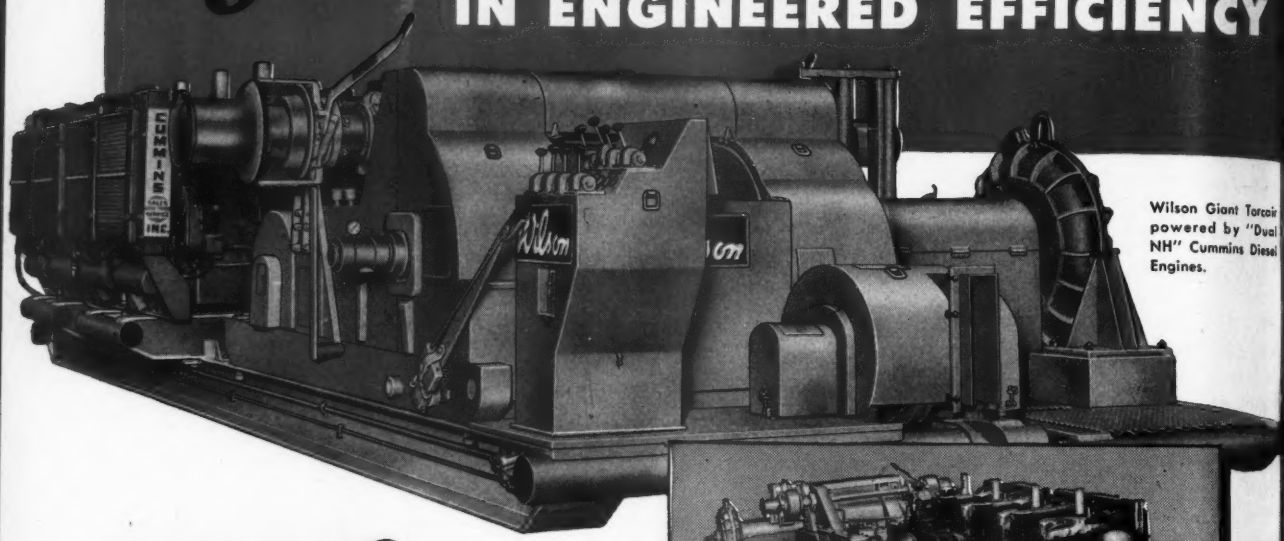

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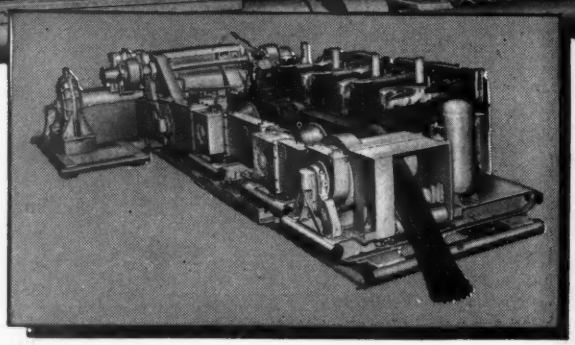

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rigs up to 3500 feet per minute with larger hoists. The low speed is usually governed by the gearing required to permit one engine to hoist the total load or by the slow speed requirements for fishing operations. The speeds between high and low are usually controlled by the shaft centers and the standard sprockets sizes for the chain required for the particular loading used. The drum diameter should be approximately 25 times the rope diameter in order to obtain good wire rope life.

The need for more than three or four speeds in the draw-works of a standard mechanical rig is shown in the accompanying "Power Chart for an Internal-Combustion-Engine-Powered Rig", (7) (8). The power curve is for a six speed drawworks driven by engines capable of delivering 340 HP when loaded to capacity. As each stand of pipe is pulled, the load is lightened, but with the governor holding the engine to constant speed, the hoisting speed remains the same until the load is lightened sufficiently to permit shifting into the next gear. With the speed constant and the load decreasing, the power delivery of the engine decreases within each gear. It is apparent that the smaller the number of available speeds, the larger will be the drop of power used in each drum speed in relation to the engine capacity. On rigs equipped with torque converters, the speed of hoisting in any given gear increases as the load becomes lighter and the power of the engine is fully utilized. The number of gear changes can be reduced on such rigs as the torque converter automatically takes care of a wide selectiion of speeds.

Auxiliary Brakes

Each drawworks should be equipped with an auxiliary brake calculated to absorb and dissipate the energy involved in lowering the heavy drill pipe and casing loads. The size of the brake should be developed on the basis of the wire line used and the speed of lowering the block. The speed factor commonly used is equal to lowering a 90 foot stand in 15 seconds. For wire lines of improved plow steel with hemp centers, the energy that would have to be absorbed for lines from 1 inch to 1½ inches in diameter would range from 1000 to 3500 horsepower, or more than twice the hoisting horsepower.

Engine Selection

In order to insure satisfactory engine service and provide ample power for the operation of the equipment, it is necessary to inject certain safety factors into the engine specifications. In drilling operations, it is necessary to avoid expensive shut-downs and a conservative engine rating is imperative. All too often the operator chooses an engine on the basis of the published power curve and finds that his rig is underpowered and the engine overloaded. In other words, it is not balanced to the requirements of the other parts of the rig which were designed with ample safety factors. The usual engine power curve is obtained from data developed with the engine operating under ideal conditions, conditions that are seldom, if ever, attained in the field. Factors that should be considered in choosing an engine are:

(1) Anticipated altitude and temperature changes from the standard atmospheric pressure of 29.9 inches of mercury and 60° F.

(2) Power requirements for auxiliary engine equipment such as fans, water pump, generator, etc.

(3) Mechanical perfection of engine that might vary because of wear or maladjustment.

(4) Allowance for a conservative maximum piston speed of approximately 1000 feet per minute and a maximum Brake Mean Effective Pressure of 80 for an unsupercharged engine.

(5) Energy value of the fuel different from the standard test fuel.

Mud Circulating Equipment

In addition to drill pipe having a high ratio of pipe diameter to hole diameter there are other factors to consider in the design of the mud circulating equipment. In the slush pump itself, it is desirable for best performance to keep the piston speed under 140 feet per minute mean velocity. The maximum speed in a power pump is determined by the pressure drop in the suction system and the fluid inertia. If these items exceed atmospheric pressure, the pump cylinders will not fill properly and a severe fluid pound will occur. Supercharging of the suction with another pump improves this condition.

In estimating the proper size of pump, the mechanical and hydraulic efficiency of the pump must not be overlooked. This is usually considered to be 85%.

The swivel is another portion of the mud circulation system that requires careful analysis to properly fit it into the rig requirements. It should normally be able to handle a gross loading equal to the loading of the hook with which it is used. The limiting factor in the choice of a swivel is the load and speed characteristics of the bearings. In hard drilling with heavy weight on the bit and slow rotary speeds, the bearings in a particular swivel would have a much longer life than if the same swivel were operated with light weight on the bit and high rotary speeds. API Standard No. 4 indicates the speed and life conversion factors for bearings. A bearing rated at 100 tons for 100 rpm would have a rating of only 69 tons at 300 rpm. These bearing factors are also very important when choosing a rotary for a particular type of drilling. An interesting comparison of the rotational requirements for various types of drilling is indicated by the following data: 100 rev. per foot of very soft drilling, 200 rev. per foot of soft drilling, 450 rev. per foot of medium hard formations, 750 rev. per foot of hard formation, and 1500 rev. per foot of very hard formation.

Auxiliary Equipment

The auxiliary equipment should be carefully considered in the design of a balanced rig so that adequate power and facilities are provided and not added as an afterthought, robbing power from other equipment. Usual items in this category are lights, mud screens, air compressors, blowout preventor actuating equipment, wash down pumps, mud agitators and bug blowers. These items require fifty to seventy five horsepower on the larger rigs.

In holes having adverse sand conditions, power and equipment for removing the sand in addition to screens must be provided. On rigs where an auxiliary mud conditioning pump is not installed, mud

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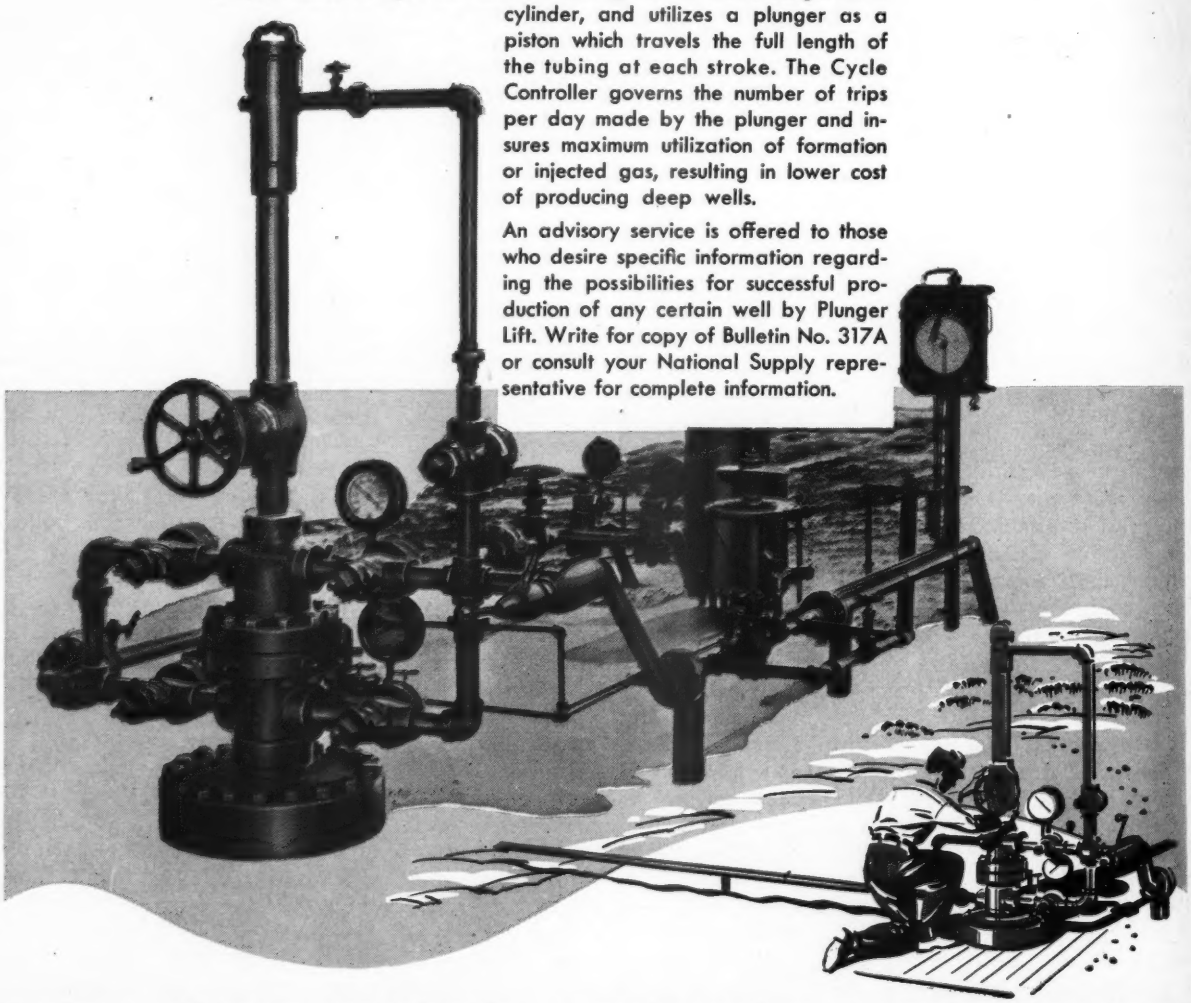

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mixing equipment of other types should be considered and power provided as required. There are many equipment aids to reduce crew fatigue such as power operated impact wrenches, tongs and slips which must be provided to obtain efficient operation and whose power requirements must not be overlooked in assembling a well designed rig.

Another feature that should not be overlooked on a well balanced rig is the safety of the crew. A considerable portion of this paper was devoted to discussion of safety factors which would improve rig performance, but which also enable the crew to work without undue hazard. In addition, there are many auxiliary pieces of safety equipment that prevent accidents and improve efficiency which should be incorporated into the ideal rig.

Unitization and Standardization

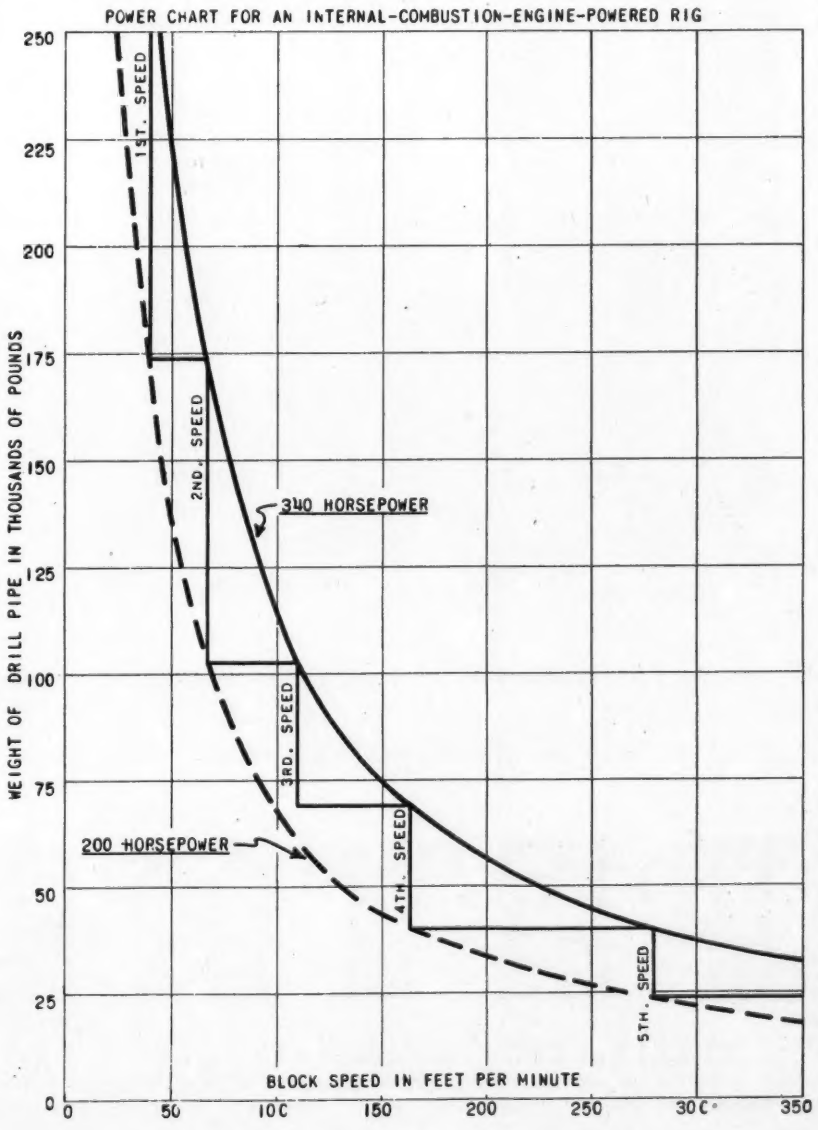
A balanced rig is also one which is carefully unitized to aid in obtaining low moving costs. Unitization should not go so far as to hamper drilling operations and thus create greater cost than the savings to be realized in moving. The packages into which the rig is broken down should be of legal size and of such bulk and weight that they can be handled safely and quickly with the transportation provided. Care should be taken to make the points of disassembly at such places that dirt cannot invade the open machinery. Proper access for servicing and repair of the equipment must not be neglected when making the rig more portable.

A balanced rig is also one that has as many of the parts standardized as possible. One type of engine should be used when feasible. Engines of the same bore and stroke, but varying in the number of cylinders or the addition of superchargers will provide a variation in power output of the engine units and decrease the maintenance problem. The use of similar bearings and sheaves in the crown and traveling block makes for better balance. The installation of one type of union or valve also aids economical maintenance. It is sometimes beneficial to standardize on one size of equipment, such as hooks, blocks, engines, etc., to enable an operator with several rigs of variety of varying capacity to have balance between rigs rather than balance in one rig.

Summary and Conclusions

A study of the factors dealt with in this article indicate that considerable care and judgment must be used in balancing the parts of a modern rotary rig to enable it to operate with the best economy for a particular type of drilling. The best economy is obtained by combining good drilling performance with high mechanical efficiency. Most complete rig assemblies that are balanced to suit particular conditions have a limited range of economical drilling depth and must be modified to suit a substantially different set of conditions. The rate of increase of loading as the depth increases, necessitates that far more caution be administered in balancing the parts of a rig for deep drilling than for shallow drilling operations. High operating costs in the mud circulation system are often caused by the small size of the drill pipe in service as the sizes of drill pipe and tool joints commonly used do not provide the maximum in hydraulic efficiency. This efficiency usually can be vastly improved, but is often accompanied with an increase in ton mile service

(Continued on Page 56)



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Los Angeles Basin

Castaic Try Still Works

Efforts have been inaugurated directed toward redrilling Atlas Oil Company's Acosta No. 1 on Sec. 24-5n-16w in the Castaic area. Bottom is 3939 ft. Meeker 7 Garner has location for Cortez No. 1 at Saugus on Sec. 7-4n-15w. Carlton Beal is beginning South Mission No. 2 test on Sec. 36-3n-16w in the Aliso Canyon area.

Belvedere Wildcat Digs

Drilling normally ahead, Boyle Royalties Corporation has passed 4700 ft. with its interesting Boyle Comm. No. 104-1 near the intersection of 1st street and Eastern avenue in Sec. 31-1s-12w in the Belvedere area, just east of metropolitan Los Angeles.

Long Beach Plant Leased

Rothschild Oil Company has leased the refinery of the Olympic Refinery Company in Long Beach. This marks the third refinery acquired by the company in that area and gives the company a throughput capacity of some 20,000 barrels of crude oil daily.

Peralta Hills Lease Obtained

Richfield Oil has leased ground in the Peralta Hills sector of Santa Ana Canyon not a great distance from where Independent Exploration recently wildcatted without success. Richfield is understood not contemplating early drilling of the newly-acquired property.

San Fernando Wildcat Rigs

Standard of California is rigging a wildcat test, Woo No. 1, about one-third of a mile southwest of the intersection of Woodley and Lassen streets in the San Fernando area. The project, on Sec. 19-2n-15w, probably will go to a minimum depth of 10,000 ft.

Inglewood Test Redigs

Near the corner of La Tijera and Centinela boulevards in the Inglewood area, Standard is redrilling at 8834 ft. with L. A. Inv. No. 4-3 on Sec. 20-2s-14w. Original depth was 9628 ft. Shell Oil's Baldwin Hills Comm. No. 1 at East Inglewood on Sec. 9-2s-14w is down 13,509 ft. and reaming. The 7-in. casing is set at 11,726 ft.

Los Angeles Well Finaled

Richfield Oil has finished U. P. Unit No. 6 in Sec. 16-2s-12w at East Los Angeles for a flow of 450 barrels

At Newhall, Standard Oil Co.'s well Newhall Land & Farming No. 5-3, H. S. Tenny drilling contractor. Left to right: Roscoe Eames, driller; Rex Stansell, cathead; Bill Tracy, lead tong; Joe Beaman, derrickman; Bill Bristow, pipe racker.

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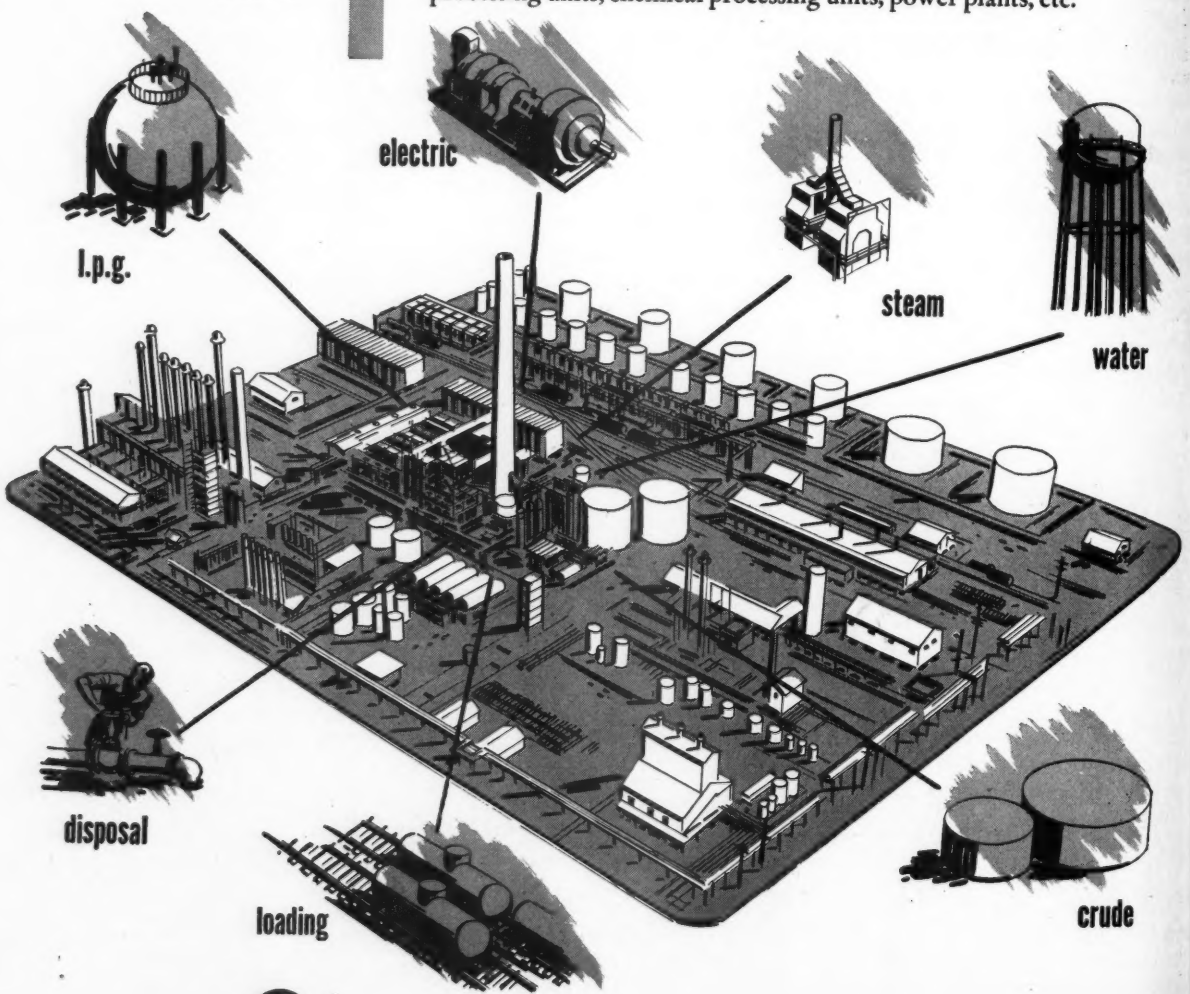

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gross through a 20/64-in. bean. Initial cut was 35 per cent. U. P. Unit No. 2 on the section is rigging.

Oak Canyon Well Staked

Doran Drilling Company of Long Beach has staked a drilling job on Sec. 32-5n-17w in the Oak Canyon area. The company is made up of Anna W. Doran and Chuck Tague.

Placerita Test Drills

Drilling has passed 6250 ft. in the General Petroleum Corporation H. & M. No. 1 test on Sec. 27-4n-16w in the Placerita area. Eclipse Oil Company's Karen No. 1 on Sec. 36-4n-16w has been abandoned at 2005 ft. Douglas Oil and Crawford & Hiles, drilling contractor, recently purchased the landowner's interest of M. R. Yant in the area, composed of several parcels aggregating 15 acres in the heart of the Placerita Canyon field.

Potrero Well Digs

Cleveland Oil Company's L. A. City No. 1 near the corner of Industrial and Eucalyptus avenues on Sec. 28-2s-14w in the Potrero area is making hole ahead at 10,310 ft.

Richfield Well Yields

In the Richfield field of Orange County, Hathaway Company has given the final touch to its White No. 1 on Sec. 28-3s-9w for 25 barrels a day on the pump from a plugged depth of 3490 ft. Total bottom is 4400 ft.

Cajon Pass Test Quits

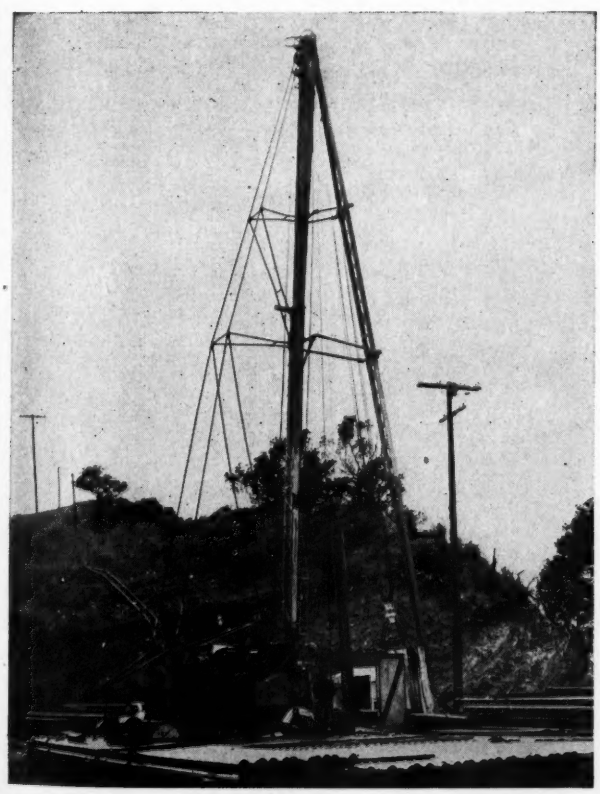
Exploratory activity with Wilrich Associates' Inland Properties No. 1 at Cajon Pass on Sec. 18-1n-4w, San Bernardino County, has come to an end at 802 ft. A core near bottom showed volcanic ash., An electric log run to bottom was the final resort before abandonment. In the Victorville area, A. C. Anderson is drilling at 1500 ft. in hard sandstone and shale in Black Butte No. 1 on Sec. 26-6n-7w. H. T. and G. G. Widney's No. 1 on Sec. 33-6n-4w has reached 600 ft. The 8-in. pipe has been set at 400 ft. Tide Water Associated's Abacherli No. 1 at Chino Hills in Sec. 12-3s-8w is below 5000 ft. in hard pebbly sandstone and stratified shale. East Basin Oil's Downs No. 1 on Sec. 31-2s-8w has started.

Del Valle Try Drills

Prospecting is going forward at 7904 ft. in the Humble Oil & Refining Company N. L. & F. No. 1 wildcat on Sec. 23-4n-17w at southeast Del Valle. St. Helena Petroleum's Ladd No. 1 in the Del Valle area on Sec. 7-4n-17w is digging below 1850 ft.

Orange County Wildcat Starts

Independent Exploration Company has started its Irvine No. 1 near the intersection of 21st street and Irvine boulevard on Sec. 23-6s-10w in the West Newport area. Jergins Oil's Ellis No. 1 at Talbert in Sec. 32-5s-10w has been abandoned at 7586 ft. Thos. M. Blake's Costa Mesa Comm. No. 1 on Sec. 15-6s-10w at Costa Mesa is underway. Barnsdall Oil's deep test in the West Coyote field, Emery Trust No. 1 on Sec. 25-3s-11w, is down 10,750 ft. and fishing.



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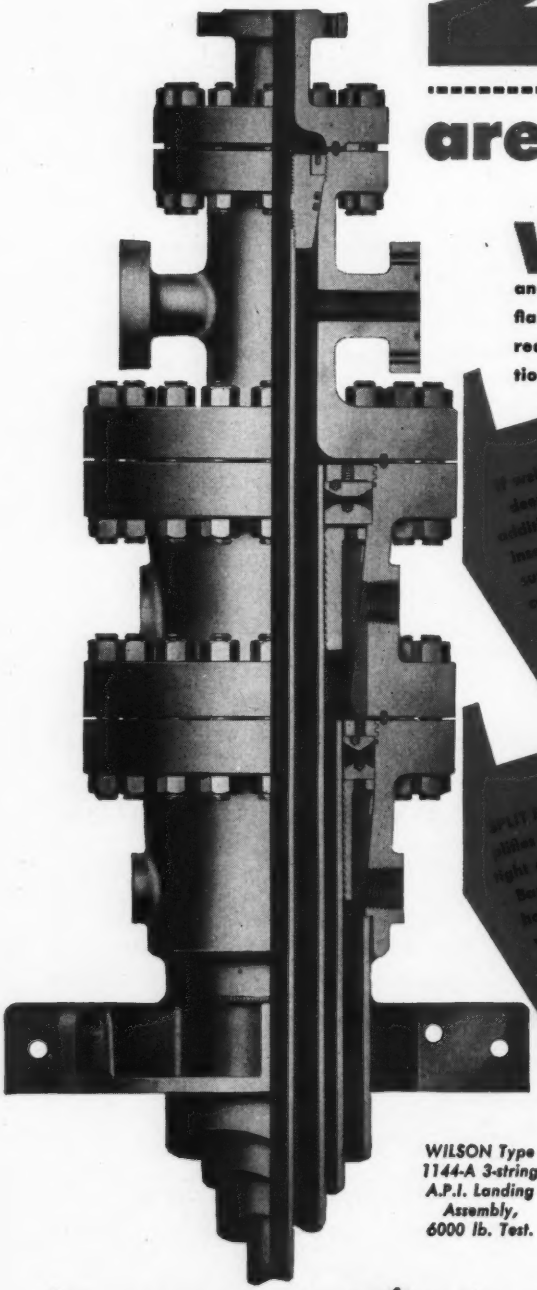
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San Marcos Test Rigging

An interesting test well is rigging up in the San Marcos area, approximately 10 miles east of Santa Ynez on Sec. 11-6n-29w, Santa Barbara County. Operator is Lewis W. Welch. The well is known as Janeway No. 1 and is on a big anticline. A successful strike there would open a wide area to development. Location is in one of California's most historic and picturesque spots and a short distance from the old Santa Ynez Mission.

Fourdeer Extended

By successfully completing its Los Flores No. 13 on Sec. 9-8n-33w in Santa Barbara County, Sunray Oil has extended production four locations in the Fourdeer field. The well was carried to 6036 ft. before plugging back to 5890 ft. and Miocene was topped at 4882 ft.

Casmalia Test Digs

Soladino No. 52, sponsored by Richfield Oil in the Casmalia area of Santa Barbara County in Sec. 18-9n-34w, is prospecting at 4988 ft. Seaboard Oil's Buell No. 4 wildcat on Sec. 24-7n-32w in the Purisima Hills is drilling at 2686 ft.

Arroyo Grande Explorer Cores

In San Luis Obispo County at Arroyo Grande in Sec. 33-31s-13e, C. W. Colgrove is coring at 2050 ft. with Patchett No. 45-33. McDonald No. 43-5 in Sec. 5-32s-13e currently put out 75 barrels a day from 3200 ft.

Yolo County Hole Abandoned

Amerada Petroleum's Capay A core hole on Sec. 34-10n-2w in Yolo County went to 2535 ft. and was abandoned. Location was 410 ft. south and 1320 ft. west from the northeast corner of the section.

Peachtree Bow Wildcat Drills

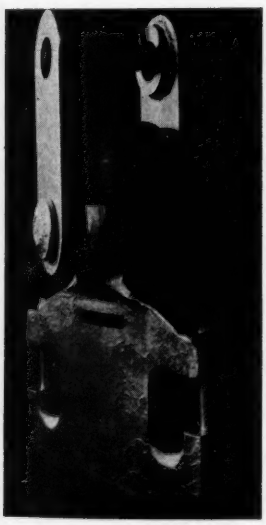
Texas Company's Reynolds No. 1 explorer on Sec. 6-21s-12e at Peachtree Bow in Monterey County is drilling and coring at 2556 ft. In the Saucito Rancho area, John Stephen Horn has location for No. 1 well on Sec. 35-15s-1e.

Rio Vista Test Flows

In the Rio Vista area in Sacramento County, Brazos Oil & Gas Commpany's Gardiner No. 4 is a new gas producer at 4600 ft. The well, on Sec. 25-4n-3e, came in for 1,090,000 cubic ft. daily through a 9/16-in. choke.

Piru Project Still Testing

Jergins Oil's Larinin No. 1 test on Sec. 24-4n-18w in the Piru area of Ventura County is bottomed at 6712 ft. and running tests. Casing is set at 4420 ft. At Fillmore, C. W. Colgrove's Bursin No. 46-18 on Sec. 18-



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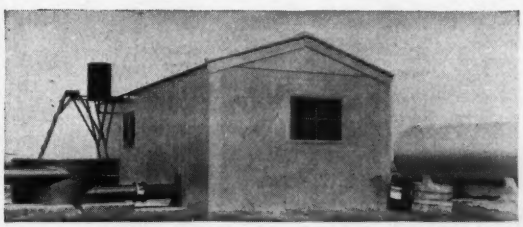

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4n-19w is drilling at 3405 ft. Humble Oil's Berylwood Inv. No. 2 on Sec. 32-3n-20w is a production failure to 6744 ft. The well has been officially abandoned.

Contra Costa Venture Starts

Standard of California has started the company's Sproule No. 1 exploratory well in the Bryson area on Sec. 14-1s-3e, Contra Costa County.

Elkhorn Valley Wildcat Drills

In the Elkhorn Valley of San Luis Obispo County, M. R. Yant at last reports was drilling at 1754 ft. in Yant No. 1 test on Sec. 28-32s-22e.

Flournoy Try Works

Drilling Cretaceous sandstone at 1450 ft. is the current status of the Marker Foundation, Inc., Marker No. 3 on Sec. 22-24s-5w in the Flournoy area, Tehama County.

La Panza Try Digs

Yellowstone Oil Company's Lewis No. 1, a wildcat well near La Panza in Sec. 24-29s-16e, San Luis Obispo County, is making hole at 840 ft.

Huerhuero Test Slated

C.C.M.O. Company is rigging up Peterson No. 1 on Sec. 11-27s-13e in the Huerhuero area, San Luis Obispo County. Location is five miles northwest of the town of Creston.

Eureka Canyon Wildcat Deeper

In Eureka Canyon in Ventura County, Thornbury Drilling Company is drilling at 640 ft. with Thornbury-Oceanic No. 1 on Sec. 33-4n-18w. Location is 2436 ft. south and 2948 ft. east from the intersection of the north line of Sec. 32 with the west line of Rancho San Francisco.

Goleta Well Drills Ahead

In the Goleta gas field, Pacific Lighting Corporation is drilling at 1200 ft. with Miller No. 5 on Sec. 20-4n-28w. The recently completed No. 4 flowed 30,000,000 cubic ft. a day from 4203 ft.

Sespe Well Completed

Merchants Petroleum Company has completed at 2767 ft. its Bonebrake No. 2 on Sec. 6-4n-19w in the Sespe area of Ventura County. Casing is set at 1654 ft. and tubing hung at 2765 ft. Representative yield is yet to be established.

Lion Mountain Well Drilling

Humble Oil is drilling below 1000 ft. with its Berylwood Inv. No. B-1 on Sec. 18-4n-22w at Lion Mountain after changing over from cable tools to rotary at 775 ft. Theo. Hammon No. 2 on the section is drilling in the shallow formation with cable tools.

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Signal Oil & Gas Company's Signal-Bolsa No. 111, Sec. 28-5s-11w, Huntington Beach. Left to right: B. D. Ladd, pipe racker; H. R. Montgomery, derrickman; "Whity" Henderson, driller; and J. J. Martin (kneeling), cathead.

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San Joaquin Valley

Jasmine Test Works

Down 2872 ft., H. A. Conway's Quinn No. 1 test well at Jasmine on Sec. 15-25s-27e is in shape to run casing. Drill site is 1473 ft. south and 430 ft. east from the northwest corner of the east half of the northwest quarter of the section.

Salt Creek Test Cased

Casing has been cemented in the Carneros Oil Company Anderson Comm. No. 4 on Sec. 19-29s-21e in the Salt Creek area. The well is bottomed at 2420 ft.

South Edison Wildcat Drills

On Sec. 26-20s-29e in the South Edison area, Capital Company's Lawson-Bennett No. 3-38 is drilling steadily ahead below 1000 ft.

Union Avenue Test Drilling

General Petroleum at last reports was drilling hard green sand near 4750 ft. with its Bankam No. 56X-4 test well in the East Union Avenue area, Sec. 4-30s-28e. Williamson No. 33-11 on Sec. 11-26s-20e at Lost Hills is down 3997 ft. and fishing for Zublin bit cutters at 3988 ft.

South Edison Wildcat Digs

In the South Edison area, Universal Consolidated is drilling at 4531 ft. in its Newberry Gibson No. 1 test on Sec. 27-30s-29e. The company's Beer No. 1 in ec. 9-26s-19e at Blackwells Corner is making hole at 2956 ft.

Amerada Nose Adds Deep Job

Barnsdall Oil Company is ready to begin deepening from 8006 ft. its J. M. & R. No. 1-28 at Amerada Nose in Sec. 28-19s-16e, Fresno County. The project was given up originally in shale last July, after sidewall samples were taken. It will now look for Eocene oil.

Coalinga Try Redrills Ahead

Redrilling has reached 5967 ft. in the Havenstrite Oil Company Covert No. 1 test well on Sec. 24-20s-15e in the Coalinga area. Pray & Walker's Nidever No. 1 in the same section showed fresh water to sump from 7862 ft. on the gas lift. At North Coalinga, Superior Oil is drilling at 6930 ft. with its SPL No. 48-23 in Sec. 23-19s-16e.

Jacalitos Test Drills

Texas Company is drilling at 5812 ft. with Raaths No. 1, a test well on Sec. 30-21s-16e at Jacalitos Front. The company's Capital Co. Three No. 1 on Sec. 19-25s-19e at East Devils Den is prospecting ahead at 3275 ft.

Cantua Creek Wildcat Spuds

In Fresno County at Monocline Point near Cantua Creek, Western Gulf has spudded its Lillis No. 22-4 on Sec. 4-17s-14e. Location is less than a mile northeast of a previous test well drilled by the company and abandoned several weeks ago.

Paloma Try On Calendar

Humble Oil & Refining Company is trying again for oil in the Paloma area. The company is about to start the drill in its KCL No. 41-18 on Sec. 18-32s-27e, approximately one-half mile southeast of the present production limits of the field. So far the production boundary of Paloma has not been reached either to the south or east. Humble evidently has developed a fault play in the area.

Turk Wildcat Oil Failure

A prospect job on the Turk Anticline in Fresno County has been abandoned at 10,342 ft. It was drilled by Continental Oil on Sec. 25-17s-15e. The well was in the no-dope category.

Comanche Pt. Wildcat Starts

Morton & Sons is starting a wildcat test well in the Comanche Point area of Kern County. A shallow test,

Production crew on Union Oil Co.'s Bell No. 52 at Santa Fe Springs. Left to right: A. T. Hill, tong; C. S. Walker, head well puller; A. S. Parker, derrickman; and O. C. Simonson, elevator.

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it is known as Macoil No. 1 and located 144 ft. south and 1300 ft. east from the center of Sec. 32-12n-18w.

Wasco Producer World's Deepest

Standard of California has successfully completed the world's deepest producing well five miles west of Wasco on the Mushrush ranch. The well, Mushrush No. 5 on Sec. 7-27s-24e, at last reports was flowing at the rate of 336 barrels of 37.7 gravity oil a day through a 20/64-in. orifice, along with 1,087,000 cubic ft. of gas daily. Depth of the Mushrush producer exceeds by approximately 1000 ft. the former record holder, a Shell Oil test in Louisiana. The new deep producer was originally spudded in May 10, 1940 and was finaled August 2, 1940. Early this year Standard went back into the well to deepen it from 13,100 ft. after production diminished. The company carried the well to a total depth of 15,966 ft. in the Eocene. Casing was cemented at 15,863 ft. Producing interval is between 15,250 and 15,350 ft. So far there are no other wells on the west side of San Joaquin Valley that have given up oil from the Eocene formation. Wasco was the scene of exciting news years ago when Continental Oil at that time drilled the first well in the world to pass 15,000 ft.

Gosford Try Digs

Less than a mile and one-half southeast of the nearest wells producing in the Gosford area, Superior Oil is drilling at 5125 ft. with its Neefs No. 54-20 in Sec. 30-30s-27e.

Doheny Oil Sold

Nassau Associates, Inc., of New York, subsidiary of Dillon, Read & Co. has purchased from Mrs. Carrie Estelle Doheny her interests in approximately 2570 acres and 72 wells producing in the Coalinga Nose, Pleasant Valley and Guijarral Hills fields in Fresno County for $35,500,000. Nassau has entered into a long-term agreement with Union Oil of California under which Union will take the entire production of the wells. The properties at Coalinga Nose and Pleasant Valley are developed fully and are currently putting out about 6000 barrels of high gravity oil daily. The Guijarral Hills field, which was discovered last year, is still under development. Nassau arranged for the financing of the transaction with the Metropolitan Life Insurance Company and the Mutual Life Insurance Company of New York. No public financing is contemplated at this time. The transaction was closed at the main office of the Security-First National Bank of Los Angeles.

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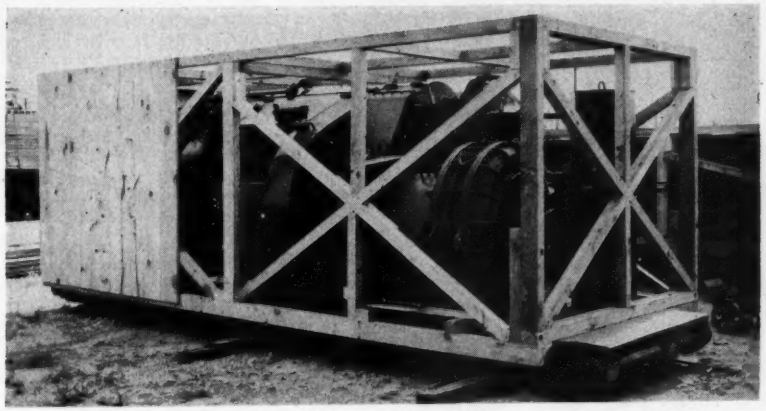

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Calder Test Oil Failure

General Petroleum has abandoned at 8936 ft. its KCL-Calder No. 36-23 on Sec. 23-29s-25e in the Calder area of Kern County. Gray sand was cored. Two locations east of its Sturdevant No. 41-26 producer, Geepee is drilling at an inconclusive depth its Sturdevant No. 61-26 on Sec. 26-29s-25e. It is on ground owned jointly by General and Universal Consolidated.

Antelope Hills Venture Drills

About three-fourths of a mile west of its Bolton No. 83. gas discovery

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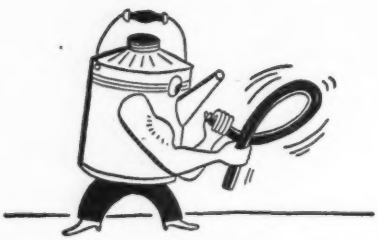
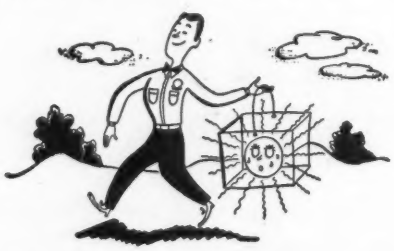


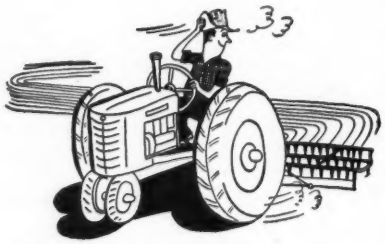
Strong man for sale:

An ancient dream of "easy living" was to own Aladdin's lamp, and "wish" the hard work done. Now the dream comes true. Petroleum and natural gas furnish 48% of our energy requirements. Petroleum is easy to buy at reasonable prices, *anywhere* in America. And it's ready to tackle almost any job you ask.



Take home some sun:

Let's look at a gallon of Shell fuel oil, for instance, in a new way. It costs you about half as much as a pack of cigarettes—but you're actually buying something more than a *product*. Your gallon of fuel oil is really "7 pounds" of portable summer weather—to warm your home . . . protect your family from the winter cold.



Faster farmwork:

Give a farmer a gallon of Shell diesel fuel, which will weigh about 7 pounds, and you're giving him tireless mechanical muscles. You're helping him cultivate a lot more land in less time. You're giving him an easier life. And incidentally, you're helping him give a lot more food to a very hungry world.

For 2 ice cream cones:

A gallon of Shell gasoline costs—without taxes—about the same as 2 large ice cream cones. It contains the energy to transport you and your family 15 to 20 miles . . . on business, errands, or recreation. Petroleum is *portable power* available—for your comfort and convenience—anywhere in America.

A forward-looking company serves all 4:

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Community
Employees
Shareholders

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SHELL OIL COMPANY
INCORPORATED

well in the Antelope Hills of Kern County, Independent Exploration is drilling at 2124 ft. in its Williamson No. 1 on Sec. 27-27s-18e. The Bolton well went to a bottom of 4313 ft. before it was plugged back for completion. Shut in when finaled, the well was opened up recently for a test and flowed 1,500,000 cubic ft. daily through a 14/64 in. bean. On the Carrizo Plains, the company's Gene Reid-Temblor-Rexroth No. 33-36 on Sec. 36-28s-18e is coring below 2850 ft.

Mojave Try Digs

Paul Beamer is down around 1800 ft. with his No. 1 wildcat on Sec. 20-32s-36e in the Mojave desert area of Kern County, with 6-in. casing cemented at 1682 ft.

Tejon Well Plans Tests

Rose L. Bright has run liner in Bright No. 1 test on Sec. 34-11n-19w in the Reserve area on the Tejon Ranch, preparatory to perforating and trials of selected intervals of oil sand measures. Total depth is 4542 ft., with casing set at 4104 ft. The well found great thickness of oil sand here and a good well is promised. It should be kept in mind, however, that wells in the past on the ranch have picked up sand in quantity, but often failed to production expectations.

Cymric Try Quits

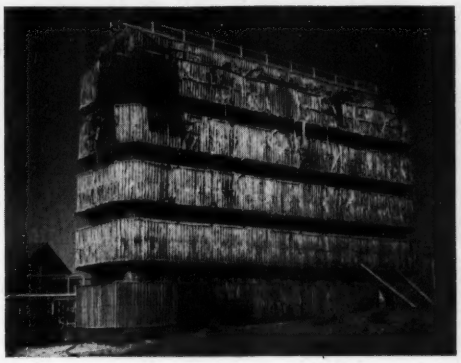
A search for new oil came to an end at 8009 ft. in the Cymric area. Pacific Western sponsored the test through the medium of its Government No. 18-75 on Sec. 18-29s-22e.

Pleito Hills Wildcat Drills

Richfield Oil's Pleito Hills No. 1 explorer on Sec. 6-10n-20w in the Pleito Hills of Kern County is prospecting below 6100 ft.

Pioneer Try Works

In the Pioneer area near the Canal field, Shell Oil's KCL No. A-37-4 on Sec. 4-30s-25e is redrilling at 8700 ft. Original bottom is 10,769 ft.



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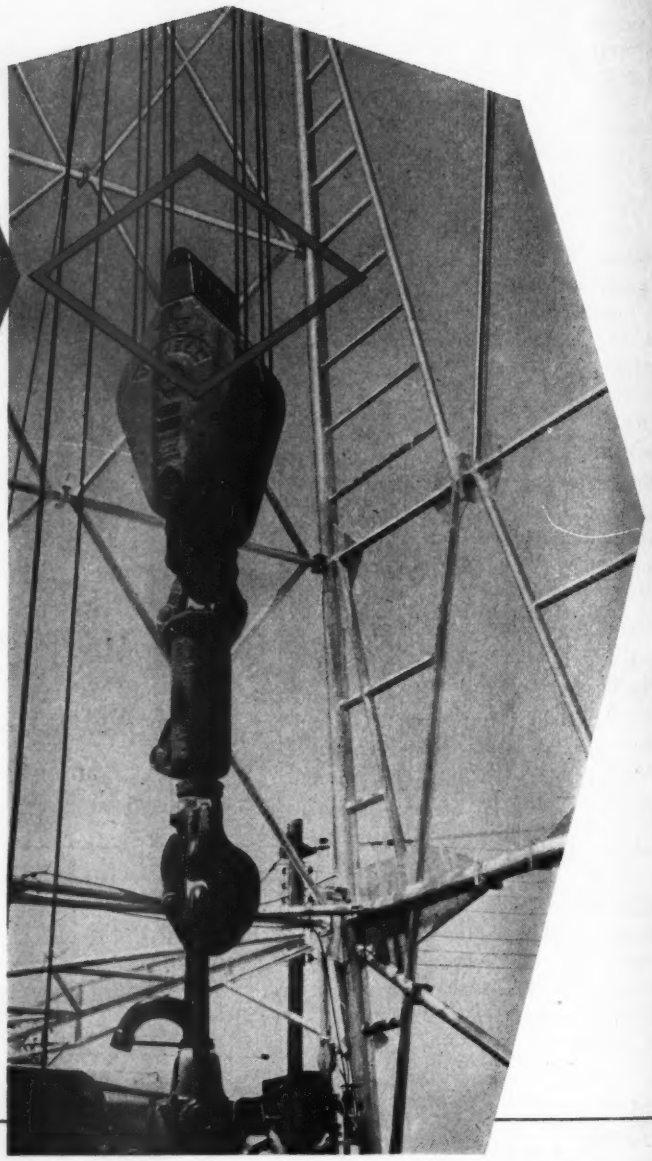

Before the rotary hose was even connected to the swivel, this crown block was rigged for safety. This operator bought a Patterson-Ballagh Block Bumper for his new equipment before the well was spudded in. He knew that an accidental block crash into the crown could cost him the well and ruin costly equipment, not to mention possible injury to the crew.

If you've ever seen the wreckage after the traveling block has smashed against the crown, it is obvious that much of it could have been prevented if shock-absorbing Patterson-Ballagh Rubber had been there to cushion the crushing impact. Even if the block only nudges the crown, sheaves are bent and wire lines injured. The cost to repair even such a slight bump would more than pay for a Patterson-Ballagh Traveling Block Bumper. Order one today!!

There is a Patterson-Ballagh Traveling Block Bumper that will fit most every block in use today. The large rubber cylinders are economical and easy to replace. Remember, the Bumper is always ready to prevent serious operating losses—it is the cheapest insurance on the rig.

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T.I.P.S.A., Santiago Del Estero 286, Buenos Aires, Argentina • A. R. Boyd, Edmonton, Alberta, Canada

Corcoran Try Drills

G. M. Russell, Robin Willis and J. R. Vaughan are drilling at 8240 ft., with their Corcoran No. 24-1 in the Corcoran area, Sec. 24-20s-22e, Kings County.

Tejon Test Unproductive

Having cored gray Santa Margarita sand, Termo Company has given up its No. 1 test on Sec. 29-11n-18w in the Tejon area.

Devils Den Well Fishing

Fishing drill pipe has the attention of Tritex Oil Company with its Tritex-Porter No. 1 on Sec. 16-25s-18e in the Devils Den area. Present depth is 3583 ft.

Arvin Test Whipstocks

After plugging back from a total depth of 7408 ft. to 6170 ft., Union Oil Company has set whipstock and is redrilling its Jewett No. 15-23 on Sec. 23-31s-29e.

Middle Dome Well Testing

Standard of California is continuing tests of its S. F. & F. L. No. 4Z-68 on Sec. 4-24s-19e in the South Middle Dome area of Kettleman Hills. Total depth is 11,925 ft.

Cuyama Valley Test Well Deep

Richfield Oil's Wegis-Reyes No. B-1 on Sec. 17-9n-25w, the deepest test well drilled so far in Cuyama Valley, is drilling and coring ahead at 7586 ft. Location is one mile southwest of the abandoned Wegis No. 1. The company is ready to spud its Schlaudeman No. 78-23 on Sec. 23-11n-28w on the Russell Ranch. Drill site is one location west of Schlaudeman No. 88-22 producer. Cuyama Valley producing companies now include Richfield, Norris, Superior, Crawford & Hiles, W. R. Gerard, Hancock and Alphonzo Bell. Motion picture executives Cecil B. DeMille and Louis B. Mayer have purchased oil rights on the Eugene L. Johnson ranch, southwest of the South Cuyama discovery.

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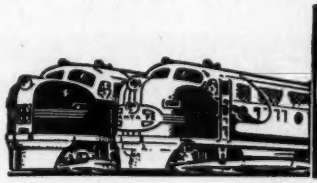
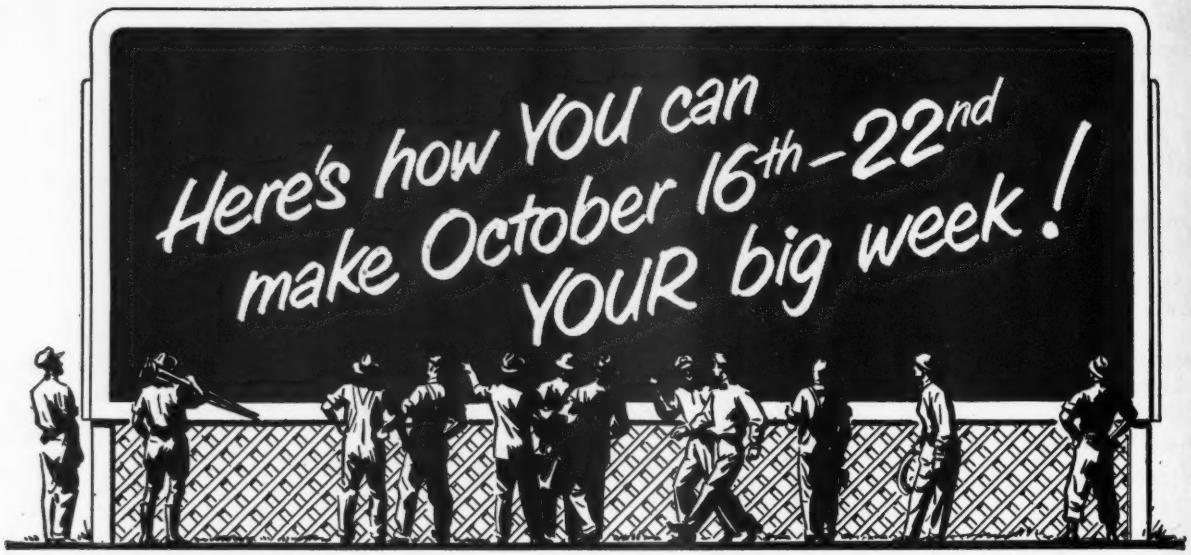


Santa Fe

Bandwagon rolling for OIL PROGRESS WEEK!



During the week of October 16th-22nd, your community's attention will be focused on the oil industry! For that's the date of Oil Progress Week—the week that gives you a chance to report the progress you and your industry have made.

Last year, Oil Progress *Day* gave thousands of oil men across the country a great chance to tell their story—and they did, with results that paid off handsomely in good will and good business. This year, with an entire *week* devoted to the event, you've got an even greater opportunity to explain how your firm is helping to provide America with *better,* more efficient oil products ... higher standards of service.

You're the One Who Gains!

YOU gain when your customers understand the competition in oil—the way you compete with rival companies to win customer approval. For as the public learns what a great job you're doing, they'll understand why your business freedom means *more* oil products, *better* oil products, better service for *them!*

Hurry! Get Ready For Your Big Week!

Get free material to promote Oil Progress Week from your local committee office. You can adapt it to fit your needs. Tie in ads ... sample speeches ... booklets ... motion pictures ... employee meeting material ... poster designs ... radio material ... everything you need to make Oil Progress Week *your* week!

Here's how you can benefit from Oil Progress Week

During Oil Progress Week get people acquainted with your business. That way, your neighbors will get a new understanding of the problems you face ... an understanding that's *bound* to result in more friends for YOU! Tell them about today's new and better oil products ... how *hard* you've worked to maintain and step up your high standards of quality and service—and you create good will that pays off for *you* and *your firm* in the long run!

Get in touch with your district committee NOW!

They'll make it easy for you to make the most of Oil Progress Week. They'll give you material you can use to tie your business in with this big nation-wide report!

Get in touch with your local O.I.I.C. office NOW, or write to national office address listed below.

OIL INDUSTRY INFORMATION COMMITTEE
——50 West 50th Street • New York 20, N. Y.——

Don't miss this chance to stand out in your community! Make Oil Progress Week Your Week!

Personalities IN THE NEWS

Roy Dinden has been named sales manager of Union Oil, according to A. C. Stewart, vice president in charge of marketing. William L. Spencer succeeds Linden as manager of general sales. Linden has been with the company since 1916. Spencer joined Union in 1932.

The E. G. (Gene) Starrs—he is president of Universal Consolidated Oil Company and prexy of the Jonathan Club—have left Los Angeles for an extended European tour. They will be gone three or four months and will visit France, Italy, Switzerland and the Scandinavian countries.

Five students in three Southern California colleges will complete their scientific studies with the aid of scholarships given by General Petroleum, Robert L. Minckler, president, announced. Arrangements have been made with the University of California Institute of Technology for the award of the one-year scholarships to seniors or graduate students.

Tip Kratka has been appointed district petroleum engineer, Rocky Mountain district, Union Pacific oil division. He is stationed at Rock Springs, Wyoming.

Darwin H. Clark, advertising agency executive, was a recent business visitor in Houston and New Orleans. His agency specializes in oil tool company and financial house accounts. Headquarters are in Los Angeles.

E. C. Babson, Union Oil, was the chief speaker at the dinner meeting of the AIME junior group, Pacific petroleum chapter at the Rio Hondo Country Club. He discussed reservoir performance.

W. C. (Hut) Erwin, western division general manager of McCullough Tool Company, Los Angeles, has completed a four-week tour of Rocky Mountain oil areas.

Russell E. Havenstrite, Los Angeles oil producer, has returned to his desk from a hunting trip in British Columbia.

R. P. Huggins, vice president and manager of Western Gulf, has left Los Angeles for a stay of three months in Boston. During his visit there he will attend an executive business course at Harvard University. The course was established by the university to accommodate 150 executives representing all branches of business everywhere in the country. It was an honor to be chosen for the study. Before leaving the City of the Angels, Huggins was host to members of the press at a luncheon held in the new Petroleum Club.

Motion picture actor and radio star Don Ameche has arranged for the drilling of a wildcat well in Borden County, West Texas, northeast of Midland. Ameche and associates hold a checkerboard spread of 10,000 acres.

Three widely known California oilmen have been appointed to the statistical subcommittee of the National Petroleum Council committee on petroleum imports. The Californians named are Stark Fox, Oil Producers Agency; Warren Kraft, Honolulu Oil; and Austin Cadle, Standard of California. Rush M. Blodget, agency executive, was previously named to the main committee.

Carter Barker, 28, Long Beach oil field welder, died from injuries from an explosion touched off by his welding equipment. He was doing a welding repair job on an empty 1000-barrel oil tank, where gas fumes evidently had collected.

Virgil E. Lycan, 88, died in Pico. He was the father of D. H. Lycan, vice president of Signal Oil & Gas Company, and T. J. Lycan, both of Pico.

University College evening division of the School of Engineering at USC has inaugurated a new seminar in problems of petroleum production management for graduate students. George Hetherington of Western Gulf Oil Company is the instructor.

Harold R. Pauley, president of the Petrol Corporation, has returned to Los Angeles from a vacation in Oregon. He divided his time fishing in the Columbia River and Rogue River.

The speakers' roster at the AIME petroleum branch meeting at San Antonio, Texas, October 5-7, includes W. E. Glenn, Continental Oil Company, and Paul L. Horrer, Scripps Institute of Oceanography at La Jolla.

The Commerce Department announces publication of a 21-page pamphlet prepared by Miss Winona Patton listing basis information pertinent to the petroleum industry. The publication embraces current and past Government studies and a wealth of other information of great interest to those identified with the oil industry.

Independent gas producers are certain of freedom from Federal Power Commission jurisdiction in the Kerr bill, which at this writing appears destined to pass the Senate and become law. The House in August passed the companion Harris bill by a 52 vote margin.

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Up to twice the production is possible when a conventional unit of short stroke and relatively fast speed is replaced with the long stroke and low cycle rate of the AXELSON Hydraulic Long Stroke Pumping Unit.

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Petroleum Production Pioneers Barbecue Tops All

Over 700 Petroleum Production Pioneer seniors, juniors and well-wishers gathered Saturday, September 10, at the Kern County golf Course near Bakersfield to top all previous successful P.P.P. barbecues. Excellent food and refreshments were served in ideal surroundings to the overflow crowd who came early and stayed late. Tales of the old times on the west side, Coalinga, etc., filled the air when old friends met to relive again some of the colorful days in the oil business.

Musical diversion was provided by Tom Pike, "Tut" Tuttle, Hugh Glen and Fred Tyler, who had an inexhaustible supply of excellent numbers to offer which were interrupted only by the equally inexhaustible vocal offerings of Dick "Hopalong" Sneddon and the occasional, plaintive howl of a stray coyote in the nearby hills.

Among others who flew up to take part in the festivities were P.P.P.'s President Russ Green, Joe Robinson, Ned Brown, and Charlie Reichert, bringing into sharp focus the contrast between the old days in the oil fields when mule skinners, instead of airplane pilots, furnished the only transportation.

One of the highlights of the affair was a family reunion of the Pyles brothers—"Red", Bob, Ernie and Brady—all four who can point to having worked in the oil fields back in 1910.

Great credit is due "Pen" Penfield, chairman of the Arrangements Committee, for the excellent handling of the affair, and especially the Valley boys headed by "Armie"

"AH SWEET OIL MYSTERY OF LIFE" retirement is finding me. . . . Standing: Bill Taylor, Fred O'Brien, Honorary Mayor Taft; H. A. Warren, John Wilt, Len Little, Charles Stover, and Ed Fink. Sitting: C. D. Ball, Soco; Harry Gill, Hall Machine Co.; and Vaughn (Ruby) Hutchins.

FRESHMEN, SOPHOMORES, JUNIORS AND SENIORS of the class of 1949: R. O. Gillis, Carroll Sweet, Dwight Bovey of Wosco. . . . Western Oilfields Supply; Ralph Darrow, Bill Whitaker, Wosco; and Radio Den Ed Darrow.

SENIOR CLASS: Glenn Books, Dunlap Welding; John Ansburger, Blackwell & Sunde; Tex Little, Chester Allen; J. C. Garriott, B&G Oil Tool; Bob Hood, A. S. Johnson Drilling Co.; John Grier, (cable tool driller); and Jess Rector, Baash Ross Tool Company.

THIS IS IT: the group you have been waiting for. George Poisson, Tunisia; "Cotton" Smyser, Ideco; his dad, Ed Smyser, inventor and retired from CCMO; F. C. Ripley, Los Angeles . . . retired CCMO chief; Tom Chandler, CCMO; Chris Rector, Union Oil Co.; and G. W. Garson, retired.

Armbruster, George Suman and Sam Kelly. Working under them was a tireless group who can take bows for putting this event over in true San Joaquin Valley style.

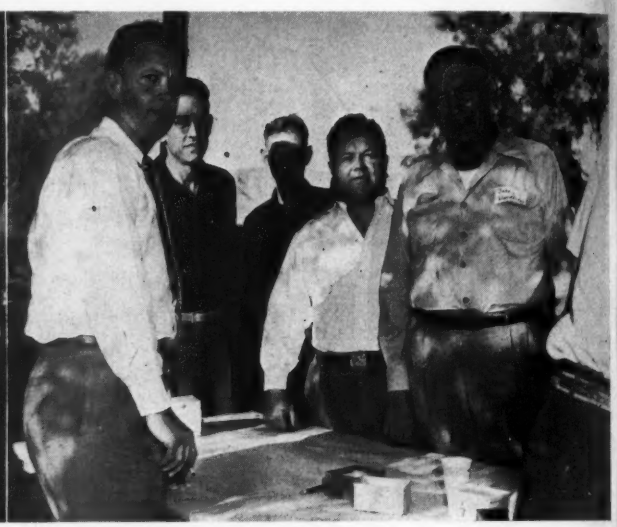
C. N. G. A. Twenty-fourth Annual Fall Meeting Announced

J. B. Taylor announced the completion of plans for the California Natural Gasoline Association's 24th annual Fall Meeting. Again the Los Angeles Ambassador will be the headquarters for the meeting which will be held Friday, October 7th, 1949. This year's meeting promises to be one of the most successful ever presented to the petroleum industry as indicated by the importance and timeliness of the papers being presented by prominent authorities.

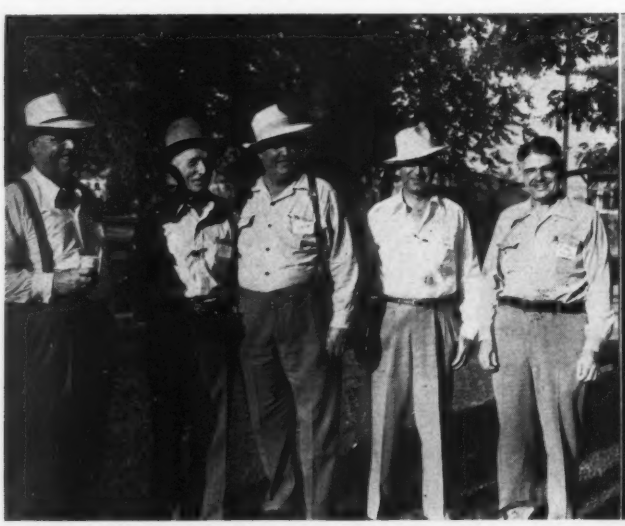
Arrangements for the day's technical program are under the supervision of Fred L. Hartley, General Chairman. A paper of much local interest will be presented by Melroy Welch, Superintendent of the Gas Department, Barnsdall, entitled "Barnsdall Newhall-Potrero Gas and Gasoline Plant." This paper will embody such features as the elimination of plant vapors by complete condensation of still overhead, process steam generated without fire by use of waste heat from lean oil and many other phases of the Barnsdall Plant.

A subject that may be of controversial tone and arouse much com-

HIZZONER the Mayor . . . Jake Vanderlei (right) . . . for the city of Bakersfield . . . a pioneer in petroleum production . . . IN HIS OWN RIGHT . . . a darned good blacksmith . . . mayor . . . and first citizen of the black gold metropolis. 'Registering with him are, to his right, Globe's Hector Hollis, Ed Spencer, (Spencer Wells) Dick Steiner of M. O. Johnstons', and Ed Embry again.



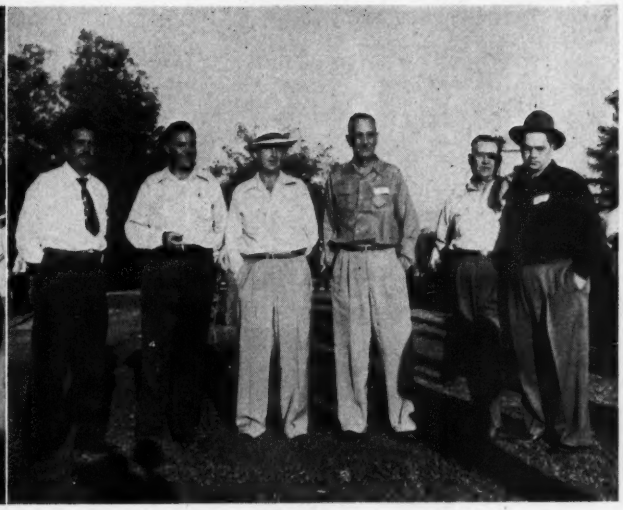
OILWIGS MISCELLANEOUS: Bob Cook of Security Engineering; Carl Good; G. T. Stewart, S O C O; Slim Curry, Richfield Superintendent; Bill Keck, generalissimo from Superior Oil; Charley Dore, and George H. Potter, of Tide Water Associated.



HOLD EVERYTHING but low gravity. . . . Art Haines, himself; O. C. L. Witte, Quality; Blimp Spence, Yowell Service; Bud Fitzer, also; Glen Kersten, Western Gulf . . . and golf.

WESTSIDE MAYOR FOR A DAY . . . Raymond (just what he used to be) Grey, of Taft who got used to shoes and oil sand. After the piano recital and the singing that "ain't what it used to be" the chorus joined him in assuring him the "old gray mare" song is just what it used to be. Next to Raymond: Pat Patterson of the "monestary;" Jean Philipp, of Nat. Supply Co.; Carl Good, Bob Fowler, Superior Oil; and Bill Pike.

DOING OIL RIGHT ARE: Joe Robinson, Santa Fe Drilling; Claude Kelly of D & B; Lyle Gifford, Rocky Mt. Drilling; Ed Leicester, Chiksan Company; and Bud Trott of Spartan Tool.



THREE PAIRS FOR A SIXSOME: C. M. Jasper, Oil Tool; Bill Ellis, Texaco; Floyd Past, same; Bob Jackson, also; Pit Cook, "kooc tip" spelled backwards, of Oil Tool Corp.; and Bud Pridy, of the same firm.

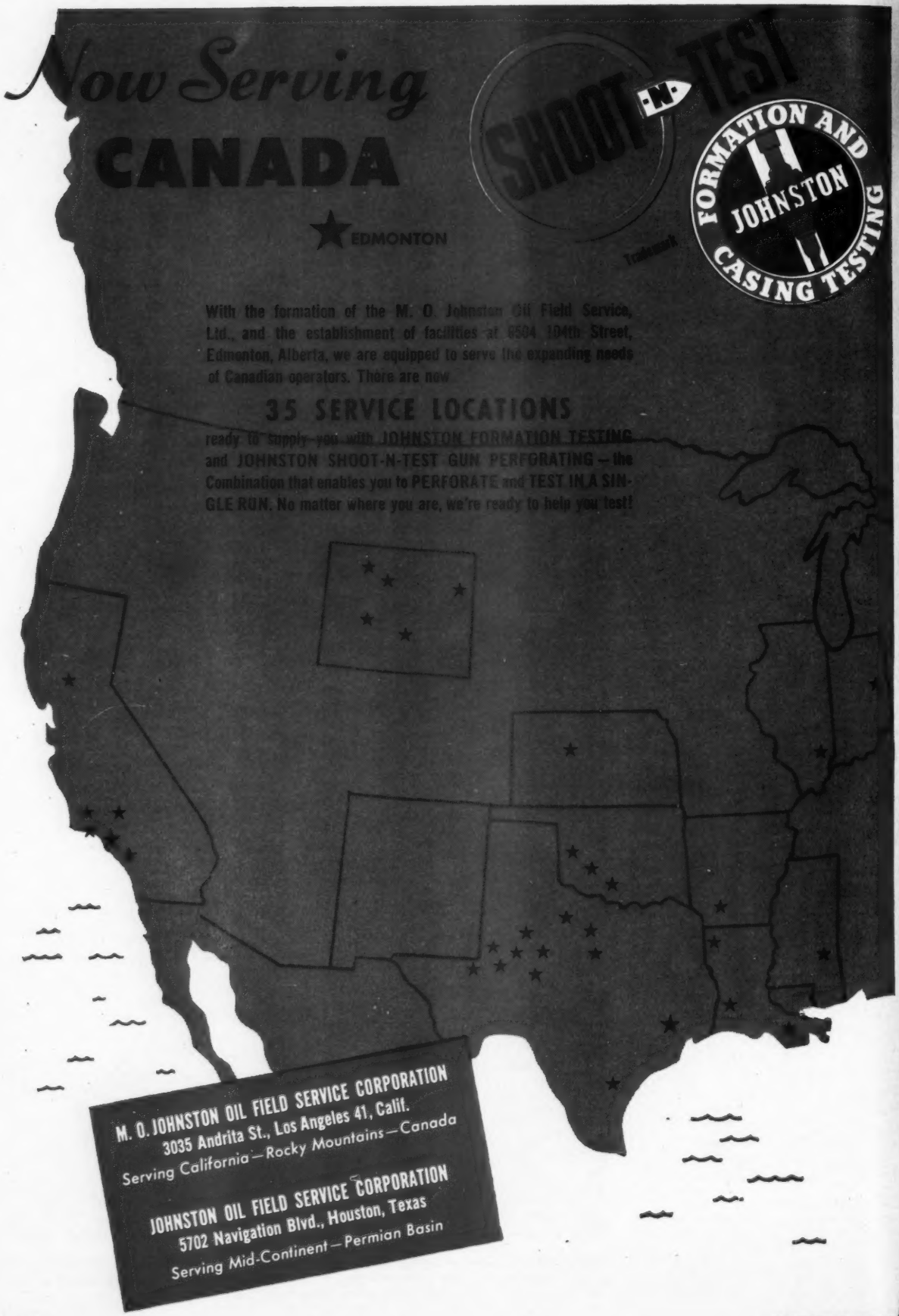
ment amongst refiners is that of "Continuous Coking — Catalytic Cracking" to be discussed by A. H. Schutte, Process Development Engineer of The Lummus Company of New York. This paper will discuss a new continuous coking process and the over-all application of such a process in an existing refiner's operating scheme.

The performance of motor gasoline is dependent upon many factors including the properties of the motor gasoline which are controlled by the refiner. Natural gasoline is also useful in balancing refinery production to meet product demand. It is clear that the use of natural gasoline aids the refiner in meeting gasoline specifications but its use may be sharply limited by performance requirement of the gasoline in which it is used. This paper was prepared jointly by G. R. MacPherson, Senior Research Engineer in Refinery Technology and F. Sipos, Research Engineer in Refinery Technology, both of the California Research Corporation.

T. L. Taggart, Manager of the Natural Gasoline Department of the Standard Oil Company of California and past president of the California Natural Gasoline Association, will handle the assignment of moderator for the "Information Please Session" in the afternoon. A panel of experts, including such men as James Pew, Sun Oil Company, president of N.G.A.A.; Howard Montgomery, Warren Petroleum Company; Coles Bason, Ingersoll-Rand Company; Dr. Frank Lockhart, University of Southern California; George Ehrhart, Ehrhart & Arthur; Ira C. Bechtold, The Fluor Corporation; Marion Fort, Pacific Lighing Corporation; and Charles Day, Richfield Oil Corporation, will endeavor to answer the problems and questions of the audience and thereby conduct a forum in which the processing, production and operating trends of interest to the industry may be discussed.

The day's program will be followed by the Fall Meeting Siesta from 5 to 7 P.M. and concluded with a banquet and entertainment staged in the Embassy Room of the Ambassador Hotel.

Upper left: Havenstrite Oil Company's well ISL-9, South Mountain, Sec. 20-3n-20w, Price Lease, Ventura County. Lower right: F. E. Fairfield's Shell & Casperson No. 1, Sec. 19-3n-30w, South Mountain, Ventura County.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With Drilling Contractors

Thomas P. Pike Drilling Company has completed 13 wells for Tevis F. Morrow at Placerita Canyon. The contractor spudded in with five rigs on August 19, 1949. Following the completion of the first five wells, operations were continued with four rigs. After the completion of the ninth well, Pike maintained operations with three rigs. All of the wells completed have averaged 1000 barrels a day. Pike, meantime, is ready to recondition General Exploration's Ferguson No. 4 in the Newhall-Potero field. Toolpusher Tex Patterson is in charge of operations.

Fowler Drilling Company is contractor on Boyle Royalties Corporation's interesting exploratory well in the Belvedere area, east of Los Angeles. The contractor has spudded Richfield Oil's Brady Estate No. 1 at Aliso Canyon. Fowler at East Coyote is drilling Sunny Hills No. 4 for Union Oil Company.

Severns Drilling Company, contractor on Union Oil's Callender No. 118 at Dominguez, is in the finishing stage with the well.

In the Inglewood field, Terminal Drilling Company is rigging up its contract job, Standard of California's L.A.I. No. 1-100.

Santa Fe Drilling Company on contract has completed two wells for Union Oil at Whittier. They are Sansinena No. 20 and No. 21, which went to respective depths of 5443 and 5003 ft. for 65 and 108 barrels daily. The contractor is nearing the completion stage with No. 22.

One of the greatest conclaves in the history of the meeting is the fitting description given to the ninth annual meeting of the AAODC in Dallas September 19-21. The meeting was sponsored by the Dallas-Fort Worth chapter of the nationwide drilling organization. Speakers from all branches of the oil industry discussed subjects pertinent and of first importance to all those interested in petroleum. C. A. Oberg, Standard of California, San Francisco, spoke on "The Balanced Rotary Rig." Ralph W. Marshall, vice president, Drilling & Exploration Company, Los Angeles, gave the "Contractor's Response" to the subject touched upon by Mr. Oberg. Nicholas A. D'Arcy, engineering consultant, Huntington Park, addressed the meeting on "Hydraulic Power Transmitters." The president's address was delivered at the opening session by Joseph S. Morris, Allen & Morris, San Antonio. Other speakers included R. B. McCloy, Stanofind Oil & Gas Company, Tulsa; Stanley Moore, Drill Collar Service Company, Midland; Hamilton Rogers, Rowan Oil Company, Fort Worth; Eugene McElvaney, vice president, First National Bank of Dallas; and Jerry S. Stover, communications engineer, and C. J. Paine, Paine Drilling Company, both of Dallas. Governor Allan Shivers of Texas spoke at the banquet closing the three-day meeting.

Joseph S. Young, Jr., has been in the contract drilling business for 48 years. He entered the business of drilling wells on contract in 1901 at Peru, Indiana. A member of the AAODC, he now maintains headquarters at Laurenceville, Illinois. He carries on rotary rig operations in Illinois, Indiana and Kentucky.

In the Wilmington field, Santa Maria Drilling Company is moving ahead with preliminaries leading to the spudding in of the Westgate Greenland Oil Company L.B.H.D. No. A-12 well. The contractor recently completed L.B.H.D. No. A-13 for the oil company.

Contract has been assigned to Drilling & Exploraiton Company to drill Humble Oil's No. 41-18 on Sec. 18-32s-27e at Paloma.

Yellowstone Oil Company's Lewis No. 1 wildcat in the La Panza area of San Luis Obispo County is drilling under the supervision of Gene Reid Drilling Company, contractor.

Rocky Mountain Drilling Company, contractor for Standard of California, Operator, on a number of wells at Elk Hills, is rigging UONPR No. 342-2G. Rocky Mountain's recent well completions throughout the state included Union Oil's No. 26-24 at Gosford. The well was finished at 8150 ft. for 225 barrels daily.

Camay Drilling Company is about to spud under contract Richfield's Schlaudeman No. 78-23 on the Russell Ranch.

Kern County's exciting well, Rose L. Bright's No. 1 in the Reserve sector of the Tejon Ranch, is in charge of the Sierra Drilling Company.

Brasse Drilling Company is fitting with heavier equipment the Regent Oil Company Baumgartner No. 2 near San Benito in San Benito County. Present depth is 2820 ft.

Work is nearing completion on a $600,000 project to expand the capacity of the North Star Oil Co. refinery at Winnipeg, third largest distributor in western Canada. Output will be increased to 4,000 barrels a day. The company obtains most of its crude from the Redwater field.

Rocky Mountain NEWS

Colorado—Idaho—Montana—New Mexico—Utah—Wyoming—Western Canada

WYOMING

The oil spotlight in Wyoming focused on the northeastern Powder River Basin through most of September. Several independent operators brought in wells with initials ranging from 1,000 to 3,000 barrels per day from the Newcastle sand in the Fiddler Creek area. Drilling was stimulated by the near-completion of a new pipeline from the Fiddler, Mush and Skull Creek areas to the major trunk pipeline connection in Lance Creek, assuring a good market for the high gravity green crude in Denver, Cheyenne, Scottsbluff and Casper.

One of the most sensational discoveries was made by Bill Tomberlin at his No. 1 state in Section 20-46n-65w, a north extension of the Fiddler Creek field. The well flowed 3,168 barrels of 48 gravity oil in the first 24-hour period, with production coming from a 15-foot section of Newcastle sand between 5072-5087.

This was the fifth recent lucrative completion in the area between Fiddler Creek proper and the Hay Creek area, eight miles to the west. Far West Oil Co., a new firm headed by William Curry, formerly of Atlantic Oil & Refining, brought in its first producer, the No. 1 Walters, for a flowing gauge of 436 barrels daily through one-half inch choke. The company then teamed with Hancock Oil Co. of California to drill a second well in Section 30-46n-65w. Union of California staked location for a well in 21-46n-65w and Northern Ordnance started a new well.

Fiddler Creek came into the oil picture last year with the discovery drilled by Big Horn-Powder River Corp., Clark Drilling and others at the No. 1 Whitzel in Section 19-46n-64w. The ratio of discoveries and the permeability and porosity of the producing sand has been markedly higher than in the nearby, older Mush Creek field. Both fields are stratigraphic.

During August, production in Fiddler averaged 2,500 barrels per day, with more than 1,000 barrels shut in without market—due to transportation difficulties. Production will be accelerated by completion of the new pipeline.

Martin T. Rathvon, pioneer in Rocky mountain oil drilling and exploration, retired Sept. 1 as vice president in charge of operations for Argo Oil Corp. after more than 31 years service with the firm and its predecessors. Born in Kansas, he moved to Colorado in the middle 1880's and worked in the Florence field, when its production was used for refining kerosene. He moved to Wyoming in 1912 in the early days of the Salt Creek boom. Mr. Rathvon later became a drilling contractor in Colorado, Kansas and Oklahoma. In 1919, he became general superintendent of the Western States Oil and Land Co., a predecessor of Argo, and maintained the connection to the present time. He will continue to maintain an office in Casper as an oil consultant.

This is one of the few areas in the Rocky mountain region where small independents have met with a high degree of success, owing to the relatively low cost of drilling to the pay (about $25,000 to $35,000 per well), the success ratio of one producer to each two wells drilled, and the high quality of crude commanding a good market price.

Several majors are beginning to take a greater interest in the development possibilities of the area. Recently Texas Pacific Coal and Oil Co., unitized a block in the area, and other blocks are reported to be in the making.

Continental Oil Co. is making rapid strides in developing its Taylor-Sussex field on the west side of the Powder River Basin, the first commercial oil field in Johnson county.

Out of seven wells drilled to date, only one failure has been recorded. Four were completed in the Lakota sand for around 250 barrels daily through choke, one was completed in the higher Shannon sand, and Well No. 7 was recently plugged back to the Shannon for completion. Commercial shows have also been found in a stray sand above the Shannon, which has been renamed the Sussex sand—making three pay horizons for the field.

Attempts to extend the field to the south have met with failure so far. American Liberty of Dallas found water in the Lakota in its first extension test, and is drilling on a second venture. Continental is reported planning a wildcat test in its Meadow Creek block south of the Sussex field, where it holds 7,500 acres. The whole area is highly faulted, with Continental getting production from two separate seismic highs in the field.

Thirty miles south of Sussex, in the Teapot Dome area of Natrona county, Amerada Petroleum Corp. is meeting with marked success in developing its new Sage Spring Creek field. The discovery well was recently completed for 135 barrels daily of 35 gravity oil on the pump, with production coming from the Dakota sand around 7300 feet. Drill stem tests indicated the second well, now in the

sand, will be an even better producer. The firm is planning additional offset drilling in the area.

Phillips Petroleum has resumed development of the South Cole Creek field, a 1948 discovery on the west side of the Powder River Basin (Converse county). The firm's No. 3 well recovered 2,200 feet of 35 gravity oil in a half-hour drill stem test of the Dakota between 8192-8242 feet, and was coring ahead to test possibilities in the next deeper Lakota zone. A deep test in the field, No. 2, failed to reach its announced objective in the Tensleep and was plugged back to Lakota for completion.

Three new field discoveries highlighted Wyoming developments in mid-September.

Farmers Union Central Exchange of St. Paul, Minn., made a strike in porous, well-saturated Tensleep sand in the No. 1 Shad in Section 6-43n-91w, Murphy Dome, in Hot Springs county. Logging top of Tensleep saturation at 4385 feet, the well made 2675 feet of 34 gravity oil in a one-hour drill stem test. Farmers Union acquired the acreage from Pioneer Oil Co. of Denver and Mule Creek Oil Co. of Billings, who drilled a venture in the same area in 1945, finding water in the Tensleep. The new discovery is about 170 feet higher structurally than the earlier failure.

Atlantic Refining Co. has completed its Lightning Creek discovery well in Niobrara county, east of the Lance Creek field, for a pump gauge of 297 barrels daily of 41.7 gravity oil. Production comes from the Basal Sundance between 3860-3881 feet. Atlantic is expected to announce locations for further wells in the field this fall.

Sinclair Oil & Gas Co. found a new pay in the Nugget (Basal Sundance, Jurrasic) at the Happy Springs venture, Fremont county, after previously testing commercial shows in the Basal Frontier and Muddy sands of Upper Cretaceous age. The operator recovered 620 feet of 40.1 gravity oil and 240 feet of oil and gas cut mud on a drill stem test between 7268-7293 feet.

The wildcat was reminiscent of the nearby Lost Soldier field, Sweetwater county, which has found commercial production in a dozen different sands all of the way from the uppermost Cretaceous to the preCambrian basement rocks. With the producing area covering only a section of land, Lost Soldier is considered the most prolific pool in the Rocky mountain region. A new well, No. 12-B Hughes, has just tested 5100 feet of oil in the Cambrian formation below 6508 feet.

Pure Oil Co. again excited interest in its Badwater prospect located 30 miles northwest of the deep West Poison Spider field in Wyoming's vast Wind River Basin. The venture found shows of oil in a thin sand section in either basal Tertiary or upper Mesa Verde at 9,160 feet—about the same depth that the Mesa Verde was encountered at West Poison Spider, where production is obtained both from Mesa Verde and Frontier—the latter at a total depth of 14,309 feet. It is considered likely the Badwater test will be drilled to Frontier near the 14,000 foot level, unless production is found in the Mesa Verde.

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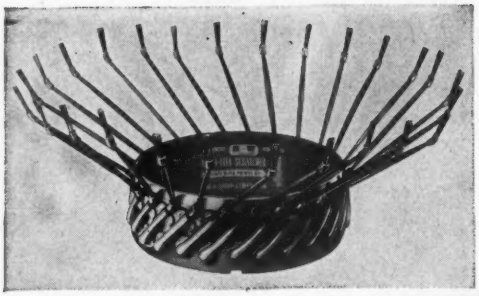

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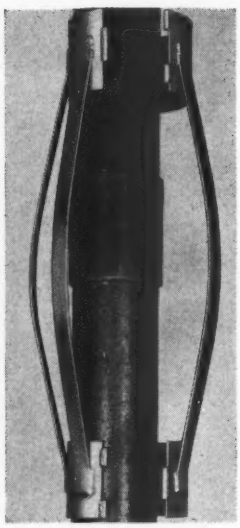

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General

While exploration in the Rocky mountain region as a whole is running behind last year's record scramble, due to the fact that production has caught up and passed demand, recent developments show a widening arena of interest on the part of major operators.

The past year has witnessed lease plays involving millions of acres in North Dakota, Montana and Nebraska and the extension of wildcatting to Idaho and more recently, Nevada.

Continental Oil and Pure are drilling a stratigraphic test in Burleigh county, North Dakota (6-140n-77w). This is a "tight hole," with no drilling depths given out as yet. Union, Hancock and Signal Oil Co. have announced another tight hole test in the Devil's Lake area (29-158n-62w), Ramsey county.

Sun Oil Co. and Sinclair Oil and Gas have teamed for an 8,000-foot Pennsylvanian test in the Big Elk area, Bonneville county, Idaho. A road is being constructed to the rugged location in Section 23-2s-44e, in an area where no drilling has ever been attempted before. It is said to be one of the largest surface structures in the Rocky mountain region.

The first test in Nevada in sometime is announced by I. W. Siegel et al at the Pogue Station anticline in White Pine county, following a lease play that extended into Nevada from neighboring Utah. Location for the test is given as Section 12-16n-54e.

Considerable drilling has been going on in western South Dakota, but with negligible results to date. E. B. Kucera, well-known independent, recently plugged a hole in the Piedmont area, near where Pacific Western some time ago encountered a big flow of hot sulphur water in a wildcat. Kucera, undaunted, was reported rigging up rotary for a second test in Section 19-3n-7e. He logged a gas and oil stain in the first well, but lost the hole.

In the San Juan Basin of southern Rio Arriba county, New Mexico, Denman Drilling Co. reported shows of oil in cores in its wildcat in Section 23-26n-2w, on the east side of the basin. Shows of light green oil and gas were logged in a sand between 3792-3809 feet, but on drill stem test yielded only a small amount of drilling mud.

States right was the dominant theme of the summer meeting of the Interstate Oil Compact Commission held Sept. 1-3 in Estes Park, Colo. A score of papers delivered at the meeting stressed the point that the states are fully capable of handling the conservation of their oil and gas through their state regulatory bodies, without intervention from the federal government.

The meeting was well-attended. Official represenatives were present from all but two of the 20 member states, in addition to observers from Wyoming, Nebraska and Utah. Governors of Colorado, Kansas, Mississippi, Texas and Oklahoma addressed the meetings, and federal agencies were

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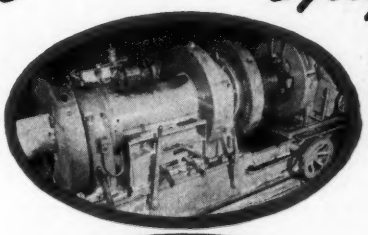

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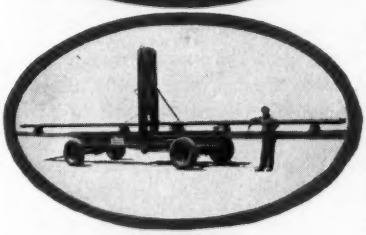

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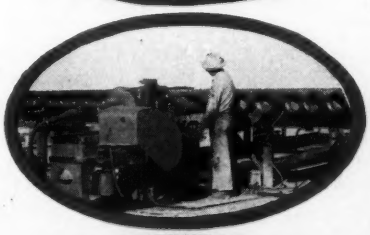

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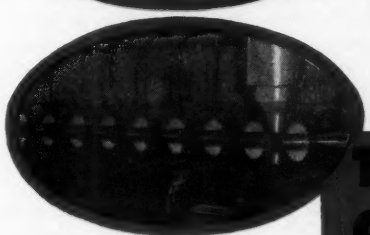

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Hopes for Dakota production at Coles Dome in Moffat county were abandoned when a drill stem test between 3194-3223 feet made water. Oil staining had been found in Dakota cores prior to the test. It was reported Pitts-Colorado will carry the well down to Morrison and Sundance.

Havenstrite Oil Co. is drilling a second well at Oak Creek in Routt county, where a discovery was made this summer. It tested 300 barrels daily on the pump with production from the basal Morrison sand.

The Rocky Mountain Association of Geologists at Denver enjoyed a picnic outing at the Stonehenge Lodge Sept. 24. Members and their families were treated to an afternoon and evening of entertainment.

NEBRASKA

A more cautious attitude toward Nebraska wildcatting has developed as a result of several recent dry holes drilled in the vicinity of Ohio Oil Co.'s new Gurley field near Sidney, so far the only commercial production in southwestern Nebraska.

This more conservative approach is reflected in a recent Nebraska state land sale where only moderate bonuses, ranging from 25 cents to $1.75 per acre, were recorded. Walter G. Davis, Casper operator, was the highest bidder with a figure of $1.75 per acre for lands in 16-22n-51w, Morrill county.

Latest failure in the Sidney area was the Roberts Bros. venture in 24-14n-50w, which as a "tight hole" attracted much interest among the oil scouts. Two of the brethren reported they were chased off the location by the operator. The well was abandoned at 4729 feet in the Dakota series after swabbing no more than a rainbow of oil through perforations after repeated acidization.

Failure of this test in the area where Ohio has met with marked success has convinced geologists they must be certain of a well-defined structure before drilling in western Nebraska, rather than gambling on stratigraphic traps.

Another failure was listed for the Kimball Development Co.'s well in the Ogallala area, 70 miles east of Sidney. It was abandoned at 3025 in the Dakota series without reporting any shows. High hopes had been held for this test, since an old well to the southwest had logged some encouraging shows when drilled several years ago.

Meanwhile Ohio, pioneer in Nebraska prospecting, was swabbing 27 barrels of oil per hour at its third Nebraska test, the No. 1 Stueve, an offset to the discovery in the Gurley area. Production came from the First Dakota sand at 4410 feet.

The company was still attempting to shut off a water zone and complete its second well at No. 1 Knievel, which went to 5026 feet and was plugged back for completion at 4423 feet.

The discovery well was last reported pumping 230 barrels of oil per day. Ohio's confidence in the field was reflected in its application to the Nebraska public service commission for a pipeline outlet.

The company has spudded two more extension wells in the field.

Despite recent failures, leasing has continued active with more than two million acres signed up in Cheyenne, Deuel, Garden, Morrill, Scottsbluff and Box Butte counties.

Stanolind Oil and Gas Co., is reported doing seismic work on the 83,000-acre Eldred ranch in west central Garden county, where it acquired leases for 25 cents an acre. Superior Oil Co. launched a checkerboard play immediately following Ohio's discovery, and has recorded 55,000 acres in Garden and Morrill counties. British-American entered the play with 4,000 acres in the Sidney area, and the Texas Co. has snapped up at least 100,000 acres in a checkerboard pattern in western Deuel, Cheyenne, southern Morrill and western Garden counties.

Others active in the Julesburg Basin play include Sohio, Frontier Refining, Sharples, W. C. McBride, Shell, Walter Davis, Cities Service, Pacific Western and R. S. Shannon of Denver.

A new wildcat test is scheduled northeast of the Gurley area by Paul Stock of Cody, Wyo. The well is expected to start drilling by Nov. 1 in either section 4 or 10, township 16n-47w.

MONTANA

The search for Devonian production continues in northern Montana

well represented.

The public lands committee went on record opposing certain new policies of the interior department which in its opinion repudiates established policies of the department.

One of the foremost resolutions urged action by the congressional house judiciary committee to speed settlement of the long standing controversy over the "tidelands or marginal seas." Legislative action by this session of congress will assist the states to maintain their high standard of leadership in oil and gas conservation, it was asserted.

Another resolution urge J. A. Krug, secretary of interior, to make no material changes in the practices of the interior department concerning public lands, without affording an opportunity of hearing to the people of the public lands states.

An interesting report was given by R. R. Spurrier, secretary-director of the New Mexico Oil and Gas Conservation Commission. "After 14 years of oil conservation," he said, "New Mexico has progressed to the point where it is looked upon as a necessity by the operators themselves, and where even the most violent opposition did not want to see the program destroyed."

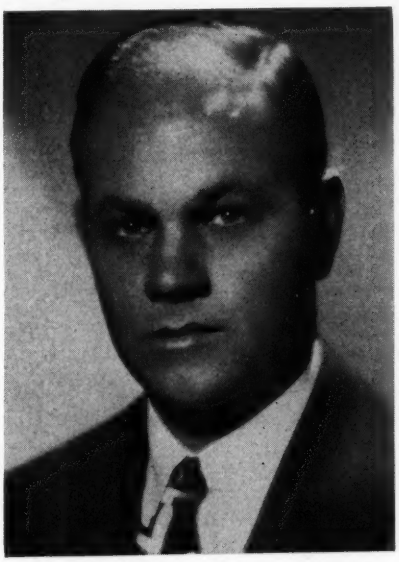
Mr. Spurrier said the New Mexico Oil Conservation Commission favors seondary recovery projects wherever feasible, and is compiling information to assist along these lines. The commission is also encouraging underground storage of natural gas until such time as there is an available market.

A new pamphet prepared by the commission entitled "Saving Your Oil," was distributed at the meeting. In it, Earl Foster, executive secretary of the Interstate Oil Compact Commission, estimates that at least five billion barrels of oil already produced would not have been produced except under good conservation practices, and at least five billion barrels of oil now in the reserves of the United States would not be in the reserves except for the conservation programs of the 14 member states.

Copies of the pamphlet may be obtained upon request to the headquarters office of the commission, Box 3127, State Capitol, Oklahoma City.

The next meeting of the commission will be held in the Roosevelt hotel, New Orleans, December 5-7, 1949. Reservations may be made through the compact's headquarters office.

Karl M. Buehler, formerly geologist with J. M. Huber Corp., in the Rocky mountain division, has joined the Denver Sample Log Service. He recently acquired a partnership interest with Joe Guyer in the company, and will handle the stratigraphic logging service.



Zach K. Brinkerhoff, Jr., head of the drilling firm of that name in Casper, recently headed the Wyoming team in the famed one-shot antelope hunt at Lander. Teams from Wyoming, Colorado and South Dakota took part in the event, which attracts national attention each fall. While Zach failed to bag his game, the event was an occasion for good sportsmanship and general hilarity. Colorado hunters were the first to down one of the speedy game animals.

J. R. Keeling, formerly landman for Lion Oil Co., at Jackson, Miss., has been transferred to Denver in the land division. He will assist David I. Sheppard, division land man.

Martin T. Rathvon, veteran oil operator in the Rocky mountain region, retired on Sept. 1 as general superintendent for Argo Oil Corp., at Casper. His place was taken by R. R. Ullstrom, who will make his headquarters in Denver. John W. Harrison, geologist for Argo at San Antonio, has been transferred by the company to Casper. Mr. Rathvon plans to continue to serve the oil industry as a consultant in Casper.

H. H. Arnold, Jr., Rocky mountain division manager for The Texas Co., has been appointed manager of exploration for McColl-Frontenac, the Canadian subsidiary. He will continue to hold his old position as well.

J. W. Kaboth, scout for Sinclair Oil & Gas Co., in Casper, was transferred to the company's scouting and land department at Oklahoma City. He has been with the firm for the last 14 months in Casper. His place in Casper was taken by C. E. Linnen, transferred from Tyler, Tex. Sinclair scouts have no housing problems when transferred to Casper—the company furnishes a house.

Jasper C. Burch, 64, of Rawlins, Wyo., division superintendent for the Utah Oil Refining Co. pipeline department, died recently at Craig, Colo., following a heart attack. A veteran pipeliner, he followed the work for 40 years in Texas, Oklahoma, Kansas, Nebraska, Wyoming, Colorado and Utah. He came to Rawlins in 1939 while supervising construction of the Utah Oil Co. pipeline from Fort Laramie, Wyo., to Salt Lake City.

General Petroleum Corp. has offered a one-year scholarship for a senior or graduate student in the University of Wyoming's department of geology at Laramie, it was announced by Robert L. Minkler, president of the company. Additional scholarships have been given to geological and engineering students at the University of California, UCLA, USC, Stanford and the California Institute of Technology.

The scholarships are valued at $750 each.

COLORADO

The Pagoda anticline in Routt county, Colorado, is due for a thorough testing in General Petroleum's second well on the structure, now investigating shows in the Entrada through casing perforations. Earlier the well tested the Shinarump sand for 1,500,000 cubic feet gas per day. The Dakota horizon probably also will be tested.

General Petroleum completed a Shinarump gas discovery here last year. The well has been shut in pending marketing arrangements.

with scant encouragement to date. General Petroleum has suspended operations at Agawam (9-26n-4w) in Teton county after testing oil and water from the Madison. Final swab tests after acidizing produced only 12 barrels of fluid daily, with only 30 per cent oil. Scattered shows were logged in the Devonian.

General Petroleum cored some oil saturation in the Madison limestone at the shallow depth of 1570 feet at No. 8-12-P in the Collins area, Teton county (12-24n-2w). This is one of several projected Devonian exploratory wells in the area southeast of the Pondera field. Four miles to the northwest, British-American Oil Producing Co. recently abandoned a Devonian test at Dutton creek. The well had a show of black oil in the top of the Devonian.

The Texas Co. apparently has a new discovery in the No. 1 Northern Pacific "E" in the Sumatra area of Rosebud county (5-9n-34e). A drill stem test in the Amsden formation, from 4389-4414 feet, recovered 123 feet of 33.5 gravity oil. The operator is drilling on down to test Madison and possibly the Big Snowy group. There has been no previous drilling in this area between the Ingomar and Ragged Point structures.

Leasing activity jumped in the vicinity of Bowes, Mont., after Northern Ordnance recently found a show of oil in the Ellis formation in its wildcat in section 2-31n-19e, Blaine county. Later water was found in the Madison. The firm is now fishing for tools after plugging back to 3425 feet for completion.

Northern Ordnance has a dry hole in its wildcat at Lightning Flat in Carter county, one of the first wildcats to be drilled in this area of the state. The well was plugged at 3545 feet after finding the Muddy sand barren.

Also in Carter county, Amerada Petroleum Corp. is drilling around 4500 feet at its Corral Creek wildcat in section 15-4s-57e. A granite test, this venture is expected to yield valuable geological information having a bearing on the whole southeastern Montana and northeastern Wyoming region. These formation tops have been released: Dakota 3295, Lakota 3435, Morrison 3634, Ellis 3731.

Montana state lands brought high prices at a sale in Helena in mid-September. The state acquired a total of $24,397 for a little over 9,000 acres included in 21 tracts of land. Ralph Lowe, Texas independent, bid a high of $13 per acre for all of section 36-9s-55e. Other successful bidders were the Texas Co., Texas-Pacific Coal and Oil Co., David Miller of Denver, Walter G. Davis of Casper.

Plans of Montana-Dakota Utilities Co. to secure a new source of natural gas from the Worland field in northern Wyoming were delayed recently by the fact that the federal power commission has not yet taken action on the proposed project for an $8,000,000 pipeline to Fallon, Mont. It is believed that the project will not be approved in time to permit start of construction before freezing weather.

The natural gas in the Worland field carries a high percentage of hydrogen sulphide, which would be removed in a chemical process for sulphur extraction in a plant being built in the field by Texas Gulf Sulphur Co. The plant is scheduled for completion early in 1950. After the gas is sweetened, it would be processed for liquid hydrocarbons in another plant to be built by Pure Oil Co. in the field. Inert gas would be used for

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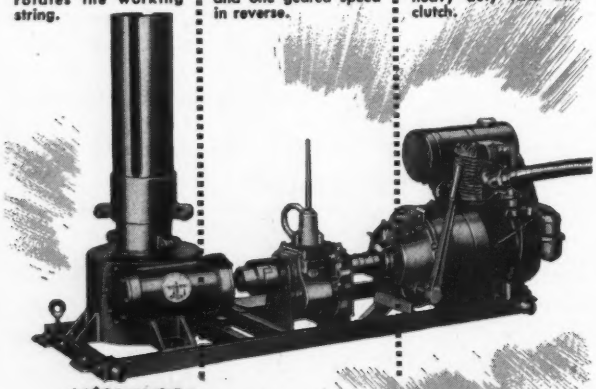

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repressuring the oil sand in the field.

Meanwhile, it is reported surveying crews are laying out the route of the proposed pipeline.

Continental's new refinery in Billings will open Saturday, Oct. 8, with an open house for the public, a luncheon served at the plant, and talks by prominent Montana officials and Continental executives, announced President L. F. McCollum. The $9,500,000 refinery, Continental's largest and northernmost in the Rocky mountain states, will have a daily crude oil run of 7,500 barrels. It will employ about 150 men and have a payroll of about a half-million dollars annually.

The refinery has been designed to handle a blend of crudes of such high sulphur and asphalt contents as to prohibit processing in the usual manner. Comprising the modern processes of catalytic cracking, catalytic desulphurization and polymerization and solvent extraction of asphalt, the plant will manufacture a high octane gasoline and a full line of burning fuels and residual oils.

Crude oil will flow to the refinery from Continental's Frannie and Elk Basin fields in Montana and Wyoming and the South Elk Basin field in Wyoming.

Located in the southeast section of Billings near the Yellowstone river, the plant is erected on a 118-acre tract, allowing ample room for future expansion.

The unique refining methods employed at the plant are expected to exert a strong influence in improving the market for the heavy asphaltic, high sulphur type crudes produced in the northern Wyoming fields.

UTAH

Production in Utah's first commercial oil field at Ashley Valley has reached a volume considered sufficient to commence negotiations for a pipeline outlet to the Rangely, Colo., field.

The August allowable for the field was 2,280 barrels, or 120 barrels per day for the 19 producing wells. Of these, Equity has 6, Stanolind 6, Crain-Griffith 4, Hollandsworth 2, and the California Co., 1. Production is trucked to Rangely at present.

A four-inch pipeline is planned by J. T. Juhan and Paul Stock, independent operators, to connect with the Rangely-Salt Lake City line. Juhan and Stock own 50 per cent of Equity's holdings of 400 acres in the Ashley Valley field.

Stanolind has just completed two more producers in the field. The firm's USA No. 6 flowed 37 barrels oil in nine hours through 7/64 inch choke from the Weber sand at a total depth of 4301, while USA No. 7 flowed 78 barrels in 14 hours, with the hole bottomed at 4216.

C. E. Spencer, formerly tank superintendent for the Stanolind Pipe Line Co., at Casper, recently took a position as general manager of the Keyes Tank and Supply Co., in Casper, and the Keyes Tank Co., of Provo, Utah. He will make his headquarters in Salt Lake City.

One of the big question marks in Utah was the status of Southern Utah Oil Co.'s No. 1 Fee at Rush Lake in Iron county, where shows of oil were reported early in September. It was rumored the operator plans to deepen the wildcat in Section 9-34s-11w. Unofficial reports said tests of the zone below seven-inch casing at 3738 ft. yielded a small amount of oil, possibly as much as 10 barrels daily.

Sun Oil Co. has moved in a rotary rig for a wildcat northeast of the Ashley Valley field in Section 26-4s-22e, Uintah county, where the Weber sand is anticipated around 4500 feet. The company holds a 3200-acre block.

On the western side of the Uintah Basin, Carter Oil Co. logged oil shows in the No. 1 Duhrkop, Section 33-4s-11w, on the Strawberry Unit, Wasatch county. Dark, brown limey oil shale, hard and dense, was cored between 952-970 feet, similar to that found by Carter and Stanolind in the Roosevelt discovery well. While encouraging, the show was not considered commercial. Carter is reaming to set surface casing prior to drilling deeper.

Tide Water is recementing at Big Flat in Grand county after plugging back from 7930 feet in the Mississippian to test shows in the Hermosa between 3902-3947, where casing has been perforated. Oil staining was found in drilling through this zone.

At Naples, north of Ashley Valley, Equity has abandoned its wildcat after finding water in both the Weber and Phosphoria.

At Pine Ridge, in Uintah county, Tide Water and Mohawk Petroleum are drilling below 3300 feet. No shows or tests have been disclosed by the operators. Pacific Western is drilling below 5000 feet in the Paradox salt formation at Salt Wash in Grand county. Sun is moving in tools for a 4500 foot Weber test at Brush Creek, 26-4s-22e, northeast of the Ashley Valley field.

WESTERN CANADA

The long awaited development of the fabulous Golden Spike field is expected to be resumed in the near future following a recent visit to Calgary by H. H. Hewetson, chairman of the board of Imperial Oil. Runaway guesses of vast oil reserves followed the drilling of the sensational discovery well, which came in for an estimated flow of 10,000 barrels a day from a record 544-foot section of oil rich Devonian. But the first two offsets—one three miles to the northeast and the other three miles to the northwest of the discovery were duds.

Now Imperial has announced plans for drilling a number of close-in offsets with one rig in continuous operation, following a pattern successfully employed in the Redwater field. The results of the close offsets will be watched with close interest by the Rocky mountain and western Canadian oil fraternity.

Alberta businessmen are hailing the advent of a pipeline 1,150 miles long through Regina to Lake Superior as a solution to oil marketing problems by mid-1951. The feeling in Calgary

is that exploration and development drilling will have to be stepped up to meet the pipeline demands by that time. More American capital will be needed to push this development, in the opinion of many oil men. Also underlining the importance of Alberta oil development is its essentialness as a factor in North American defense, which has been stressed by General Hoyt S. Vandenberg, chief of staff, U. S. Air Force, General Omar Bradley, chief of the U. S. joint staff and other military spokesmen. These personages have been interviewed in the Edmonton papers to this effect.

The preliminary work of laying out the $90,000,000 pipeline route to lakehead is expected to be long, arduous and costly. Imperial officials say it will entail surveying in all kinds of weather, over many difficult types of terrain, as well as the details of compensating hundreds of thousands of individual farmers for rights-of-way and satisfying countless government precedures—all of which consume time. And all of this work must be accomplished before the first ditching machine tears into the Canadian prairies.

Imperial's score for one week in the Redwater field recently was five producers. Here's the way the wells are coming in:

No. 28, completed at 3256 feet for initial of 1,572 bbls daily.

No. 4 Egremont, completed at 3260 feet for 1,752 bbls daily on a five hour test.

Redwater 34, completed at 3293 feet for an open flow potential of 1,490 barrels daily.

Redwater No. 36, bottomed at 3253 feet, rates initial potential of 1,380 bbls. daily.

Amelia No. 6, treated with 2,000 gallons of acid, yielded 1,491 bbls. daily; total depth 3223 ft.

Imperial has eight other wells drilling or nearing completion in the prolific pool.

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A new flowing well was brought in at the Joseph Lake field in mid-September when the Superior-Joseph Lake No. 2, offset to the discovery, gauged 60 barrels an hour. Interest in the well is divided between Imperial, with 50%, General Pete 15%, Superior and Kroy Oils 12½% and Jupiter Oils 10%. It is located on an 8,960-acre block.

Allowables were boosted in the Redwater, Leduc-Woodbend and Golden Spike fields early in September, due to an increase in demand noted by Imperial Oil Co. The new allowables are: Redwater, 135 bbls. daily; Leduc-Woodbend D-3 zone, 115 bbls; D-2 and Lower Cretaceous, 80 bbls. daily, and Golden Spike, 325 bbls. daily.

Slightly lower quotas are offered by British-American and other major buyers of crude in these fields.

A high rate of wildcatting in Alberta was evident in figures released for June by the province's conservation board. It reported footage in "other areas"—meaning mostly wildcats—totaled 119,000 feet. This compared with development drilling of 88,000 feet at Leduc, the same at Redwater, and 2,654 feet at Turner Valley.

Cumulative oil production from all fields, including natural gasoline, totaled 9,170,155 barrels for the first half of the year. This was almost twice the figure for the corresponding six months of 1948, and about three times greater than the first half of 1947.

Leduc field headed the list with 4,714,287 barrels, followed by Turner Valley, 2,105,372 bbls. and Redwater, 1,535,842 bbls.

Appointment of J. K. Swanson as provincial supervisor of natural gas in Saskatchewan was announced recently by J. H. Brocklebank, resources minister for the province. The appointment was dictated by "greatly increased activity in the prospecting, exploration and development work in Saskatchewan's pre-Cambrian area, coupled with the fact that practically all potential crown petroleum lands in Saskatchewan are under agreement for exploration and development," said the minister. "This has made the task of administering and supervising a very onerous one."

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Frank M. McMahon, one of Calgary's most successful independent oil operators, has been appointed director of the Western Petroleum association, it was announced by E. Kolb, secretary. McMahon is president of several companies, including Pacific Petroleums, Peace River Natural Gas, Westcoast Transmission, Bear Oil, Atlantic Oil and Alberta Distillers. He attended Gonzaga university and Whitworth college at Spokane.

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California Oil World's Monthly Summary

CALIFORNIA DEVELOPMENT AND PRODUCTION

	JULY, 1949, DEVELOPMENT				PRODUCTION	
	Active Drilling Wells	Oil Wells Completed	Initial Production B/D	Oil Wells Completed First 7 Months	Daily Average July 1949	Daily Average July 1948
SAN JOAQUIN VALLEY REGION						
Ant Hill	.....	.....	.....	.....	841	1,094
Antelope Hills	.....	.....	.....	.....	956	1,186
Bellevue	.....	.....	.....	.....	245	268
Belridge—North	1	.....	.....	1	3,513	3,610
Belridge—South	1	2	60	64	3,628	9,111
Blackwell's Corner	.....	.....	.....	.....	119	144
Buena Vista	.....	.....	.....	9	35,619	45,573
Calder	2	1	232	2	161	.....
Canal	.....	.....	.....	.....	1,926	1,902
Coalinga Group						
Eastside	.....	.....	.....	16	12,683	18,512
Oil City	.....	.....	.....	.....	86	76
Coalinga—Nose	.....	.....	.....	.....	46,155	53,500
Coalinga—Northeast	.....	.....	.....	.....	5,486	10,099
Guijarral Hills	8	4	1,796	24	8,875	.....
Pleasant Valley	.....	.....	.....	1	2,768	3,668
Jacalitos	.....	.....	.....	7	6,118	6,027
Westside	1	.....	.....	20	4,797	7,098
Coles Levee—North	1	.....	.....	8	17,178	16,021
Coles Levee—South	.....	.....	.....	.....	2,774	3,088
Edison	2	.....	.....	31	10,573	11,600
Elk Hills	8	3	1,034	20	10,606	5,249
Fruitvale	1	3	674	10	7,699	6,449
Gosford, East	2	.....	.....	7	1,184	.....
Greeley	1	.....	.....	1	13,060	13,850
Helm	.....	.....	.....	.....	2,682	3,333
Kern Bluff	2	1	76	31	2,230	1,253
Kern Front	.....	.....	.....	3	6,883	9,133
Kern River	1	.....	.....	45	8,512	12,846
Kettleman North Dome	2	.....	.....	2	31,604	34,726
Lanare	.....	.....	.....	.....	1,168	1,293
Lost Hills	.....	1	22	6	6,123	8,021
McKittrick Group						
Belgian Anticline	.....	.....	.....	3	1,459	1,066
Cymric	.....	.....	.....	5	8,492	15,376
McKittrick	.....	.....	.....	.....	709	2,749
McKittrick Front	.....	.....	.....	.....	1,037	2,296
Salt Creek	.....	.....	.....	1	3,953	6,070
Sheep Springs	.....	.....	.....	.....	710	731
Temblor Ranch	.....	.....	.....	1	84	90
Midway-Sunset	5	6	144	53	33,464	42,216
Mt. Poso Group	1	.....	.....	7	11,824	12,873
Mountain View	.....	.....	.....	7	3,428	3,514
Paloma	4	1	1,211	8	12,243	11,715
Poso Creek Group	.....	.....	.....	1	2,080	3,708
Pyramid Hills	.....	.....	.....	.....	217	231
Race Track Hill	.....	.....	.....	1	1,909	1,944
Raisin City	1	.....	.....	6	3,770	3,309
Rio Bravo	.....	.....	.....	.....	12,111	12,067
Riverdale	.....	.....	.....	.....	2,700	3,142
Round Mountain Group	.....	.....	.....	4	6,646	7,503
Russell Ranch	5	9	6,178	65	20,360	1,423
South Cuyama Valley	5	5	6,098	14	3,979	.....
Strand	.....	.....	.....	.....	713	513
Strand—East	.....	.....	.....	.....	470	498
Tejon Ranch	.....	.....	.....	2	2,280	3,003
Ten Section	1	.....	.....	3	6,370	6,870
Union Avenue	.....	.....	.....	.....	176	263
Wasco	.....	.....	.....	.....	59	153
Wheeler Ridge	.....	.....	.....	5	774	423
Other Fields	5	5	349	29	2,170	1,273
TOTAL—San Joaquin Valley Region	60	41	17,874	523	400,439	433,813
COASTAL REGION						
Santa Maria District						
Barham Ranch (Los Alamos)	.....	.....	.....	.....	.....	10
Casmalia	.....	1	68	3	885	1,000
Cat Canyon—East	.....	.....	.....	1	249	448
Cat Canyon—West	4	2	482	15	12,127	15,995
Four Deer	.....	.....	.....	1	454	648
Gato Ridge	.....	.....	.....	.....	3,022	3,683

	JULY, 1949, DEVELOPMENT				PRODUCTION	
	Active Drilling Wells	Oil Wells Completed	Initial Production B/D	Oil Wells Completed First 7 Months	Daily Average July 1949	Daily Average July 1948
COASTAL REGION—Continued						
Guadalupe	1			3	66	33
Lompoc					34	6,741
Olivera Canyon				2		807
Orcutt	1	1	282	12	4,747	4,622
Santa Maria Valley				4	14,722	20,289
Tinaquaic					25	
Zaca Creek				5	44	2,037
Santa Barbara District						
Capitan					1,837	2,415
Coal Oil Point						
Elwood				2	7,265	7,374
Santa Barbara					44	78
Summerland	1			1	17	3
Ventura District						
Montalvo West	1			2	758	588
Padre Canyon				9	7,920	6,357
Rincon	1			4	3,463	3,100
San Miguelito	2	1	1,372	7	6,213	4,967
Ventura Avenue	14	6	2,296	38	60,731	52,079
North Santa Clara Valley District						
Del Valle	1	1	180	15	8,888	9,594
Hopper Canyon					158	173
Oak Canyon					1,675	1,983
Ojai Group	3	1	99	10	645	683
Sespe Canyon Group	1	1	12	5	264	215
Temescal					512	574
Others				3	66	76
South Santa Clara Valley District						
Aliso Canyon		3	1,975	7	3,430	3,690
Bardsdale	3			7	1,626	853
Newhall-Potrero	2	1	560	9	8,833	7,626
Oxnard					295	1,247
Placerita Canyon	4	14	12,458	73	17,609	
Shiells Canyon	1				787	889
South Mountain	2	3	732	20	6,608	6,033
West Mountain	1			3	728	1,055
Others	1				671	1,040
Miscellaneous	1			36	462	170
TOTAL—Coastal Region	45	35	20,516	297	177,880	169,175
LOS ANGELES REGION						
Brea-Olinda	2	1	108	13	15,166	15,764
Coyote—East		4	411	9	4,088	4,854
Coyote—West		2	254	15	13,074	15,238
Dominguez	1	1	78	3	12,569	13,697
Dominguez, East					18	19
Dominguez, Southeast	1			2	295	73
East Los Angeles	1			2	1,296	1,203
El Segundo					335	381
Huntington Beach	8	7	1,300	59	58,334	57,770
Inglewood	1			16	14,449	12,602
Lawndale				1	651	801
Long Beach	6	5	689	23	23,071	23,085
Montebello	1			7	6,414	6,640
Newport	2	1	15	3	6,199	6,947
Playa Del Rey					1,676	1,952
Potrero	2	1	151	5	1,298	1,264
Richfield	2	2	105	10	6,422	6,281
Rosecrans-Athens Group	1			12	6,586	4,602
Santa Fe Springs	2			1	14,390	14,887
Seal Beach		1	1,362	7	12,267	12,024
Torrance	1			4	7,509	7,756
Whittier				1	527	947
Wilmington	11	11	2,222	91	120,088	132,484
Yorba Linda				2	179	985
Other Fields	2	1	113	8	1,725	1,839
TOTAL—Los Angeles Region	44	37	6,808	294	328,626	344,095
EXPLORATORY						
Outpost Wells	42					
Wildcats	24					
Gas Wells	1	2	Gas	13		
Abandoned Drilling Wells		52		333		
TOTAL CALIFORNIA	216	167	45,198	1,460	906,945	946,880

Emsco Opens New Ultramodern D+B Plant at Garland

Over four and one-half decades of specialized experience in the manufacture of sub-surface pumping equipment are climaxed by the opening of the new ultramodern D+B plant in Garland, Texas. This new plant, operated by the D+B Division of Emsco Derrick & Equipment Company is now in full production of a complete line of oil well plunger pumps, sucker rods, couplings, and miscellaneous production accessories for the oil fields.

Covering nearly 15 acres, the new plant is located on Belt Line Road within the corporate limits of the City of Garland, a friendly growing industrial community 15 miles northeast of Dallas, Texas.

D+B's new Mid-Continent plant features the latest and most modern machinery for the manufacture of sub-surface pumping equipment. The entire plant was designed, built and tooled solely for the production of sucker rods, sucker rod couplings and deep well plunger pumps and accessories. Many pieces of machinery in the new D+B plant are the only ones of their kind in the world, having been specially designed for installation in the new D+B-Garland plant. Typical of these new modern custom-built machines are the full length normalizing and drawing furnace for the precise heat treatment of sucker rods, the Barnes honing machine for precision honing of interior surfaces of pump tubes and working barrels to a smooth mirror-like finish accurate within ± 0.0005 inches, and the Tocco high frequency induction machine for case hardening of sucker rod couplings to a uniform depth of hardness.

Three separate buildings make up the new D+B plant. These are: the office building facing Belt Line Road; the combination guard house, change room and clock house building at the plant entrance; and the main shop building.

The main office buildling embraces a total of approximately 5400 square feet, completely air-conditioned, and is equipped with the latest, most modern office facilities. The shop building is of steel frame construction, composed of five 50-foot bays, each 360 feet long. Each bay is serviced by a 5-ton monorail-type bridge crane. Craneways are provided with cross transfer tracks permitting movement of cranes into other bays of building. A spur of the M-K-T railroad runs inside the main shop building in the warehouse area. Five railroad cars can be spotted within the building, permitting protected loading and unloading in all kinds of weather. The reinforced concrete shop floor is elevated, thus allowing railroad cars to be unloaded at car floor level. Illumination is provided by a combination of incandescent and mercury vapor lighting. All water piping and electrical conduit is set beneath floor. A central heating plant circulates hot air to the various parts of the plant. This is supplemented by hot air ducts running from the cooling bed of the full length normalizing and drawing furnace.

The D+B testing laboratory and various shop offices are also located in the main shop building. Laboratory and gage room are completely air-conditioned. Complete modern laboratory equipment has been installed for the most scientific testing of materials, control of processes and development of D+B products.

The D+B Division of Emsco Derrick & Equipment Company has had a long and varied history. It was originally founded in 1905 by Mr. Daniel Daniels, and the first shop building, 28′ wide by 46′ long was constructed in Los Angeles in March of that year. Oil well plunger pumps at that time consisted of cast iron working barrels, made from cylindrical castings bored out and reamed smooth, equipped with steel plungers and rough cast iron collars on each end. Mr. Daniels de-

Aerial view of new ultramodern D+B plant at Garland, Texas. Garland is a growing, friendly, industrial community located 15 miles northeast of Dallas, Texas.

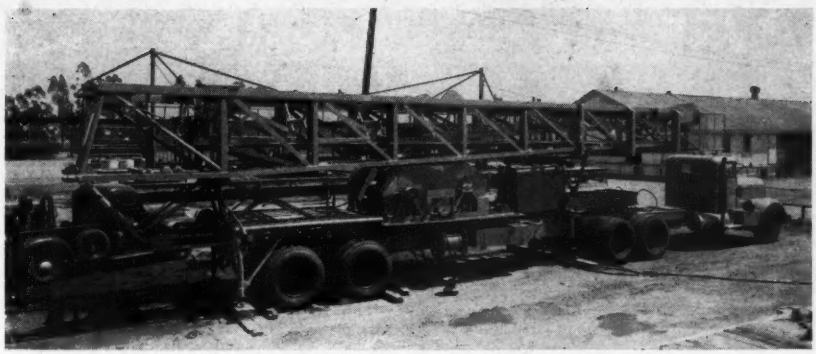
veloped and perfected the first sectional liner pump, now the accepted standard of the industry for efficient service under severe pumping conditions. In May 1908, Mr. Lysle P. Burgess joined with Mr. Daniels in building the revolutionary sectional liner pump, and in 1909 the young company was incorporated as the D+B Pump and Supply Company. From this modest beginning, the D+B has continued to grow and expand. A new plant was constructed in 1919, which was at that time one of the most modern of its kind in the world. A Dallas plant was constructed in 1924 to meet the Mid-Continent demand for D+B pumps and sucker rods. In the fall of 1927, Emsco Derrick & Equipment Company purchased the two manufacturing plants of D+B Pump and Supply Company. Today, 45 years from the time Mr. Daniels first started the company, D+B is recognized as one of the leading manufacturers of sub-surface pumping equipment.

All D+B sub-surface pumping equipment is distributed by The Continental Supply Company in all areas of the United States with the exception of California, where D+B has its own field stores. The Continental Supply Company has more than 70 field stores and offices, located in all major domestic oil producing areas. In addition, representatives are located in Canada, Argentina, Bolivia, Brazil, Chile, China, Colombia, England, Ecuador, Peru, Trinidad, Uruguay and Venezuela.

Howard Supply Company New Distributor for Autotrol Separators

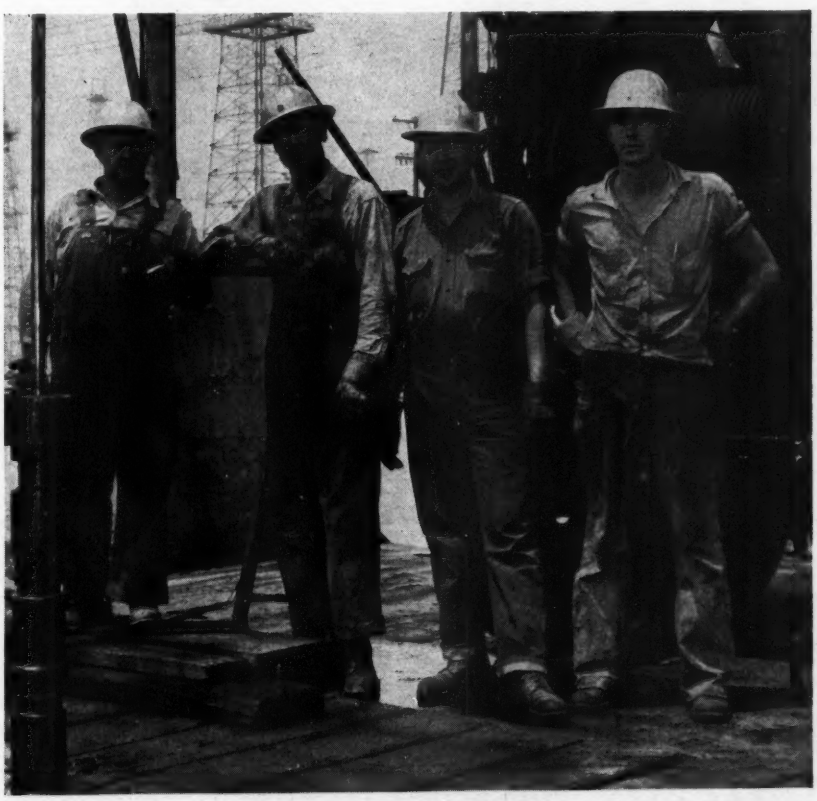
Howard Supply Company announces that it has acquired from the Baroid Sales Division, National Lead Company, effective August 1, 1949, the exclusive distribution and sales rights for the Autotrol Oil and Gas Separators manufactured by the Pipe Fabricating & Supply Company.

Stocks of Autotrols and parts will be carried in all of Howard's Stores throughout California. For information and service the nearest Howard Store or field representative should be contacted.



The Franks unit shown is assembled on a 35-foot trailer equipped with 10.00 x 22 tires for good load distribution. Power is supplied by a 140 GK Waukesha engine with a Torcon Torque Converter, through a Franks patented power take-off. The jackshaft and double drum hoist are chain-driven. The raising and lowering mechanism is also chain-driven, and may be thrown out by the spline in the Franks power take-off.
The hoist consists of a main drum, or drilling drum, capable of handling 6,500 feet of 2½ inch tubing. The sand reel has a capacity of 6,800 feet of 9/16 inch sand line. All controls are air-operated at the control position on the derrick leg at the wellhead. The derrick is an 84-foot, 150,000-lb. capacity, telescoping derrick capable of stacking 6,500 feet of 2½ inch tubing in doubles. The derrick conforms with the California Safety Code; and the whole unit complies with California Highway Laws with a height of 13 feet, 4 inches at the highest point; and a width of 8 feet.
The unit is so designed as to allow the operator to carry up to 72,800 lbs. of load weight. This will more than cover the drilling line, sand line, hook, travelling block, compressor, and power tong.

The Autotrol Separator is novel in that no floats or moving parts are required inside of the separator. Any repairs or replacements are easily accessible and without taking the separator out of the line. The efficiency of the Autotrol Separator is said to be very high, and it has proven to be a very popular item in the production fields of California.



Production crew on the General Petroleum Corp.'s Santa Fe Community No. 79 at Santa Fe Springs. Left to right: J. W. Poteet, head well puller; R. J. Mosely, elevator; Turner Smith, derrickman and H. W. Veach, tong.

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LAUGH THIS OFF!!

The Morning After—Wife Speaking

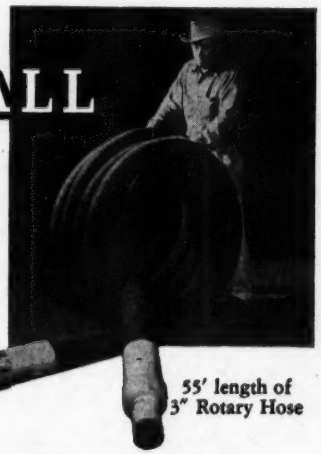
Good morning, my bright international mate,
My outstanding genius in problems of state.
I trust all is clear in that wonderful mind
Which last night remodeled the whole of mankind!
Your handling of Russia, the Ruhr, Palestine
And China and Greece, it was masterly, fine!
You're sure to be named as "The Man of the Year".
Here's four or five aspirins—swallow them, dear.

Awake, my fine songster! It's well on towards noon.
All morning I've waited, just hoping you'd croon
A measure from "Chloe" or "Deep Rolling Sea"
Which last night you sang until half after three.
You awakened the neighbors, you tripped on the mat,
And one of your props was your hostess' hat.
I'm sure she will want you again for tonight,
The life of the party, whenever you're tight.

Arise, my sweet Prince, but be careful, don't skid.
Rise and consider the things that you did.
The uprooted garden, the splintered garage;
It sounded just like an old-fashioned barrage.
Go see your hostess—carry a check.
I think if you sign it just "pain in the Neck"
The bank will okay it—'twould have to be you,
The clown that went berserk "twixt dawn and the dew".

So drink up the seltzer, you chattering drone,
It's said to be good for a splintering dome.
I wish I were Sandow, how far I would throw you!
For the next 30 days please pretend I don't know you.
My juvenile jackass, my dim-witted duffer,
You say you feel awful? Well, dog, gone, SUFFER!

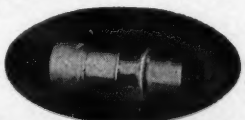
NEW
GOODALL
FLEXO
ROTARY HOSE
Outlasts all others



55' length of 3" Rotary Hose

NEW construction gives Goodall "Flexo" Rotary Hose higher strength, greater flexibility, and longer life . . . Flexo lasts so long it cannot be compared with any other hose. So flexible we pack a 55' length of 3" hose in a 63-inch box! So light in weight special loading racks are unnecessary! It safely withstands bending that would immediately ruin ordinary Rotary Hose. All this plus the Barney Coupling, which is even stronger than the hose, gives you the finest Rotary Hose on the market! Write for folder today!

Other Goodall Products:
All types Hose, Packing, Rubber Footwear, and Waterproof Clothing.



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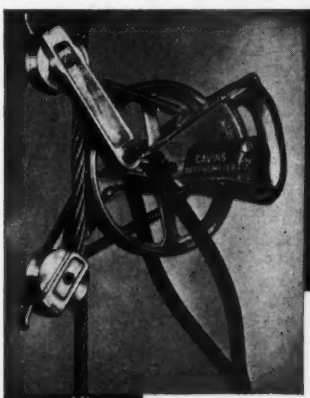

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THE CAVINS DEPTHOMETER

The Balanced Rotary Rig

(Continued from Page 17)

on the rig because of the larger and heavier drill pipe required. The most desirable balance between these two items of hydraulic efficiency and ton mile service constitutes the major problem in obtaining a balanced rig for engaging in deeper drilling.

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This paper is a partial abstract of that presented under the same title at the Ninth Annual Convention, American Association of Drilling Contractors, Baker Hotel, Dallas, Texas, September 19-21, 1949 (Ed.)

The Chemical Treatment of New and Producing Wells

Since the advent of well washing compounds most of the emphasis has been put upon cleaning of the bore hole of a well. The well washes were designed primarily to dissolve mud cake and shale that might plug gravel packs or pre-packed liners. This has been a rather successful operation in a great many instances. A well treating chemical should be designed which not only will act as mentioned above but will also act on the pores in the producing formation. A great many formations in California are tight because of the bentonite and silt present in the sand. If it were possible to squeeze the well treating chemical into the sand and by its action cause silt and bentonite to shrink and interstitial water to disperse, the permeabilities of some sands could be greatly increased. Laboratory tests have shown permeabilities of tight sands to have increased about four times after being treated with certain chemical solutions.

Effect of Chemical on Permeability, K, of Oil Sand Core Samples:

Type of Mud:	Oil Base	Emulsion	Clay Mud	Over-All Average
Average Ksr/Ks:	3.0	4.1	5.8	4.3

Order of Tests:

Ks=Formation Water, Km=Chemical, Ksr=Formation water with core reversed.

In order to properly apply this method the chemical should be squeezed into the sand rather than being applied in a washing manner. If the permeability of the sand is low, it does not seem reasonable that the chemical solution will properly penetrate the sand unless some force is applied. It is logical to assume that by the above method it would be possible to increase the permeability of the sand several times more than it is in its original state. There are several completion practices which could adopt the use of chemical treatment in the sand. In some instances, it would be possible to spot the chemical opposite the section of the well which is to be gun perforated. After shooting, the chemical could be reverse circulated from the hole and the casing scraped, then a new batch of chemical could be squeezed into the formation. If a liner was run it would probably be best to wash the well with the chemical and then squeeze a new batch of chemical into the sand, with the proper tool. For wells that have been on production for some time and are considered clean of mud cake it would only be necessary to squeeze them with the chemical.

Another use for well washing chemicals that has been used some and from a theoretical standpoint appears to be logical, is to put it between the mud and the cementing operations. This should help to clean the mud cake from the bore hole and permit a better bond between cement and formation. The use of a chemical wash ahead of cement should in no way replace scratchers, since there is not sufficient time for the chemical to disperse the mud cake without the aid of the scratchers. Also, scratchers provide additional action which tends to prevent lost circulation and puddles the cement when it arrives in place.

In the chemical treatment of wells which have been gravel packed sometimes the rapid action of the chemical so completely affects the shale bodies present that they slough to the point where damage is done to the liner and mechanical failure prevents further production. To meet this problem a buffering additive has been incorporated into the well wash which prevents the disintegration of shales.

Chemical treatment of the bore hole and the formation surrounding the bore hole will lead to the following results:

1. Shrinking of clays and bentonites.
2. Dispersions of emulsions and asphaltines.
3. Freeing of bonded silt.
4. Shrinking and dispersing of muds and mud cakes.
5. Dispersing of high surface tension water block.

It is logical to assume that it is best to treat a new well before bringing it in and rectify any harm that has been done to the formation by the drilling of the well.

A scientifically developed and properly used well treating chemical applied to a well which has been drilled with the proper mud can go a long way towards increasing the ultimate production of oil wells.

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